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Dietary pattern between Shia and Sunni Muslim obese women

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Abstract
The present study was done to compare dietary habits between Shia and Sunni Muslim obese women in the age group of 31-40 years. In the present study 68 subjects were screened based on body mass index greater than 23. The subjects were selected from two areas namely Mint and Mannady in Chennai. Among them 38 were from Shia Muslim community, in this agakhanis were selected and 30 were from Sunni Muslim community, in this hanifi and shafi were selected. Interview Schedule was used to collect information on dietary habits and food frequency pattern. Three day dietary recall method was used for collecting information on their dietary intake for three consecutive days. The study was carried out for 3 months. The data obtained was subjected to statistical analysis in order to draw inference. The statistical measures used include mean, standard deviation and t test. Majority of the Muslim consumed items like rice, dhal, potato, beef, egg, meat and chicken daily leading to increased intake of carbohydrates and energy similarly more amount of sunflower oil was used for all the preparation and they also consumed more amount of sugars in the form of sweets like badhusha, laddu and mysorepak. Fried items like vada and chips and bakery items like biscuits, puffs and pastries and beverages were also consumed more, resulting in high intake of fats.
Nutrients intake like energy, protein and fat were consumed by both the Shia and Sunni Muslim obese women subjects in higher amount than the recommended dietary allowance. The calcium and iron requirement of the individual were met in higher amount.

Keywords: dietary, Shia and Sunni Muslim, frequency, nutrients, community

Introduction
A famous ancient proverb states "eat breakfast like a king, lunch like an ordinary person, and your dinner like a beggar". These words of wisdom have long been discarded. Modern life has brought with it more food with high caloric density and better taste (Saw S.M and Rajan U 1997) [16].
Imbalanced diets containing more protein, fat, and calcium and less amounts of fibre, iron than the recommended dietary allowance. Kosulwat V (2002) [8], has found in his study that people of Thailand have changed from traditional high-carbohydrate diet (rice and vegetables) to diets high in fat and sugar. In addition, the pattern of food expenditure changed from purchasing fresh food for home preparation to purchasing ready-to-eat highly processed foods. During the same period, occupational and commuting physical activities have progressively declined because of an increase in urbanization, industrialization and automation, resulting in increased time spends in sedentary activities (Popkin B.M. 1998) [14]. Women are comparatively more prone to obesity than men especially among Muslim community due to intake of fat dense foods like fleshy foods and the lack of physical activity. In Muslim community most of women are obese than any other community women (Paula L.G *et al*, 2001) [12]. Hence the present study is aimed to compare the effect of dietary habits between two Muslim community (women) namely Shia and Sunni Muslim obese women in the age group of 31-40 years.
The Shia Muslims belong to northern part of India (especially Mumbai and Gujarat). Among them the Agakhanis (sub caste of Shia Muslim) who have migrated to Tamilnadu were selected for the study. In the Sunni a sub caste called hanifi and shafi Muslim were selected from Tamilnadu. These two Muslim communities were taken for the study as they form the major part of the Muslim community.
In England, its annual health survey has recorded dramatic increases from 13.2% to 22.2% in men and 16.4% to 23% in women in just 10 years up to 2003. This compares with an obesity rate of 6-7% in 1980 (International Obesity Task Force, 2005). In African and Asian countries, obesity is more prevalent in urban than rural populations. In economically advanced regions, prevalence rates may be as high as in developed countries. A Significant finding from the WHO MONICA project is that women generally have higher rates of obesity than men (WHO 2000). The common causes of deaths were due to obesity are cerebro-vascular diseases (n=262 men, n=338 women) Other causes included diabetes (n=123 men, n=147 women, infectious disease (n=74 men, n=86 women), hypertension (n=31 men, n=47 women), rheumatological diseases (n=4 men, n=19 women) and other non-specified causes (n=237 men, n=362 women) (Ramadas K, 2008) [2]. Overweight specifically refers to an excessive amount of body weight that may come from muscles, bone adipose (fat) tissue, and water. Obesity specifically refers to an excessive amount of adipose tissue. (National institute of Health, 1998). Psychological status can influence eating habits, because most people eat in response to negative emotions. Stress for example, not only increase consumption of food but also shifts consumption toward high caloric foods that are normally

avoided (Zellner D. A 2006) [20].

The modern diet of developed and developing countries contains more fat and considerably less fibre than the recommended levels. Thus, in one large epidemiological study, far constituted 37.8% of total energy intake compared to a recommended level of lesser than 30.0%, whilst fibre intake was 8.6g/1000 kcal per day compared to a recommended intake of 14g/1000 kcal (Howard B.V, 2006) [7]. Epidemiological studies have confirmed the positive correlation between a high-fat diet and the development of obesity (Savage J.S. *et al* 2008) [15].

Meats are high in energy and fat content, and thus may be associated with higher risk of obesity. Many controversies remain regarding the association between meat consumption and obesity. In United States national cross-sectional data show positive associations between meat consumption and risk for obesity and central obesity (Wang y, 2009) [17]. The calorie dense diet common in the western world may predispose to obesity via elevated postprandial insulin levels resulting from the high carbohydrate intake which leads to increased triglyceride storage in the adipose tissue depots (Ludwig D.S, 2000) [10]. Body mass index and the body fat percentage is higher in Indians than in Caucasians (Freedman D.M. *et al*, 2006) [5].

A combined diet-plus-exercise programme provides greater long-term weight loss than a diert-only programme. However, both diet-only and diet-plus-exercise programmes are associated with partial weight regain (Wu. T *et al*, 2009) [19].

A high fat diet enriched with saturated fatty acids is the common diet in developed countries whilst in poorer countries the majority of people derive their calories from a vegetarian diet (Cordain L *et al*, 2005) [4]. The food containing saturated fat results in greater weight gain compared to food containing unsaturated fatty acids (Piers L.S *et al* 2003) [13]. Both national and international bodies recommend an increased intake of fruits and vegetables in order to decrease the risk of overweight and obesity. Fruit intake reduced body weight, five of the prospective observational studies showed that fruit consumption reduced the risk of developing overweight and obesity, and four of the cross-sectional studies found an inverse association between fruit intake and body weight (Alinia S, 2009) [1].

Objectives

1) To determine the anthropometric measurements such as height and weight, in order to screen the subjects based on body mass index (greater than 23).

To assess and compare the dietary pattern of the subjects using a 3-day dietary recall and frequency of consumption of different food groups between the Shia and Sunni Muslim obese women.

Materials and Methods

The present study was done to compare dietary habits between Shia and Sunni Muslim obese women in the age group of 31-40 years.

Hypothesis

Based on the objectives the following hypothesis was formulated:

There was no significant difference in the dietary pattern of the subjects collected using a 3-day dietary recall and food frequency questionnaire between the Shia and Sunni Muslim obese women.

Study Methodology

Study Design

A research design is the arrangement of condition for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari C.R, 2004) [9]. The present study is a descriptive cross-sectional survey design. A descriptive cross-sectional survey design is a research study which is concerned with describing the characteristics of a particular individual, or of a group of narration of facts and characteristics concerning individuals, group or situation. Survey refers to the method of securing information concerning phenomena under study from all or a selected number of respondents of the concerned universe (Kothar C.R, 2004) [9]. The present study is descriptive in nature and of survey type.

Sampling Design

Sampling is a process, which helps to identify the characteristic of the universe of population or population by studying only a part of it (Gupta S.P, 2005) [6]. The process of selecting the samples or respondents is called sampling techniques. The selected respondents should be as representatives as possible of the total population in order to produce a miniature cross-section (Kothari C.R, 2004) [9].

Sampling Technique

In the present study, a purposive sampling technique was adopted. In this method of sampling, the investigator purposively chooses the particular units of the universe for constituting the sample on the basis that one will be typical or representative of the whole (Kothari C.R, 2004) [9].

Samples Size

A total number of 68 subjects (Shia and Sunni Muslim obese women) were selected from two areas namely Mint and Mannady in Chennai. Among them 38 were from Shia Muslim community and 30 were from Sunni Muslim community.

Criteria for Selecting Subjects

Inclusion Criteria

1. Women belonging to the Muslim community in the age group between 31 t 40 years.
2. Among Sunni Muslims, hanifi and shafi were selected and in Shia Muslim agakhanis community were selected.
3. Subjects who have body mass index above 23 were selected.
4. Women who were willing to participate in the study.

Exclusion Criteria

1. Women below 31 years and above 40 years were excluded.
2. Women who were not willing to participate in the study.

Duration and Place of the Study

The duration of the study was for a period of 3 months. The

study was carried out in two areas namely Mint and Mannady in Chennai.

Tools of Data Collection

1. Interview schedule.
2. Three day dietary recall.
3. Food frequency questionnaire.

Interview Schedule

This is the method of data collection through personal interview in a structured way. It involved the use of predetermined questions and the interview followed a rigid procedure laid down asking questions in a form and order prescribed (Kothari C.R, 2004) [9].

Three Day Dietary Recall

A 3-day dietary recall was utilized to get data on the food consumption pattern of the selected Shia and Sunni Muslim obese women. This was carried out to obtain information on energy, carbohydrate, protein, fat, calcium and iron. The nutrient intake was calculated using information from Nutritive value of Indian foods by Indian Council of Medical Research (2003). Three day dietary recall is a method of data collection where the food intakes of the subjects were noted for three consecutive days.

Food Frequency Questionnaire.

Food frequency questionnaire was also administered to find the food consumption pattern of the subjects.

Procedure

1. The subjects were screened based on the BMI (Greater than 23)
2. The interview schedule was administered for the collection of information on three day dietary recall and food frequency was collected from the subjects.

Statistical Analysis

The following methods were used for statistical analysis;
Percentage
Arithmetic Mean.
Standard Deviation.
t-test

Results and Discussion

The present study was done to find out and compare the information on dietary habits between Shia and Sunni Muslim obese women. A total of 68 women subjects were selected consisting of 38 Shia Muslim and 30 Sunni Muslim for the study. The information from the interview schedule and the results obtained from dietary assessment were processed, tabulated and subjected to statistical analyses. The results are discussed under the following headings.

1. Dietary assessment
2. Mean and t values depicting dietary pattern in both Muslim community**.**

Dietary Assessment

1.1 Type of meal

The information obtained through the interview schedule shows that uniformly all the subjects selected for the study were non vegetarian.

1.2 Frequency of Consumption of Different Food Group

Fig 1: Cereal consumption of Shia and Sunni Muslim obese women

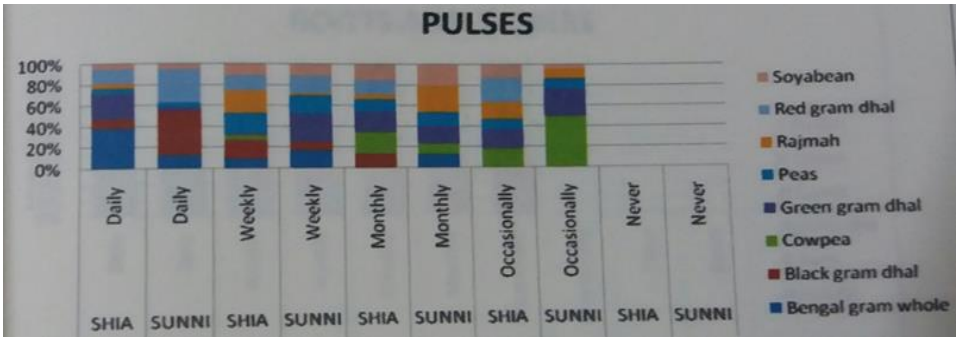

Fig 2: Pulses consumption of Shia and Sunni Muslim obese women

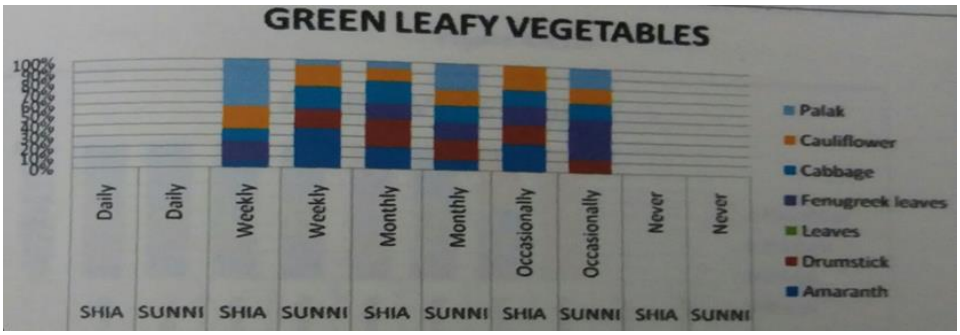

Fig 3: Green leafy vegetables consumption of Shia and Sunni Muslim obese women

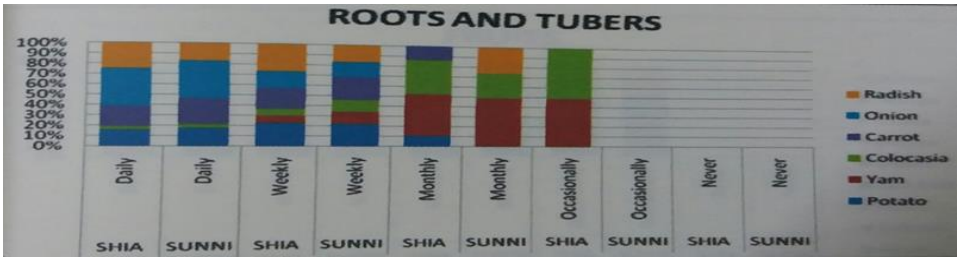

Fig 4: Roots and tubers consumption of Shia and Sunni Muslim obese women

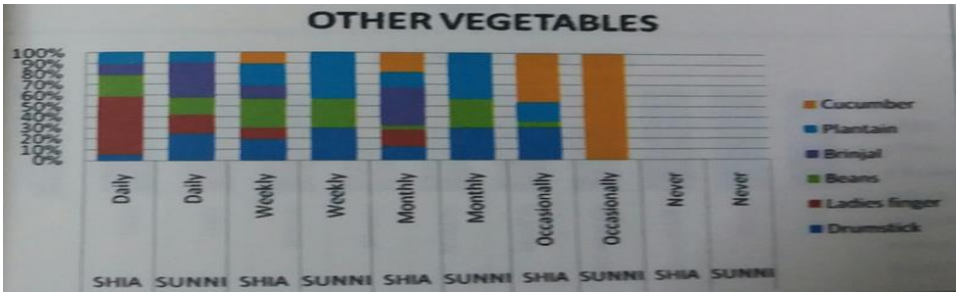

Fig 5: Other vegetables consumption of Shia and Sunni Muslim obese women

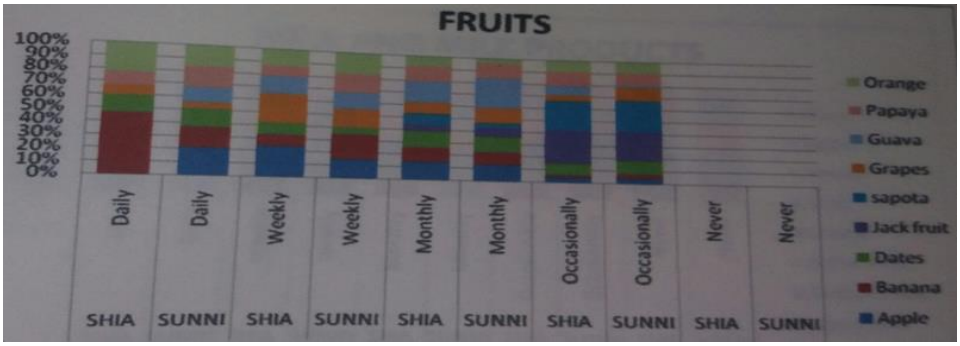

Fig 6: Fruits consumption of Shia and Sunni Muslim obese women

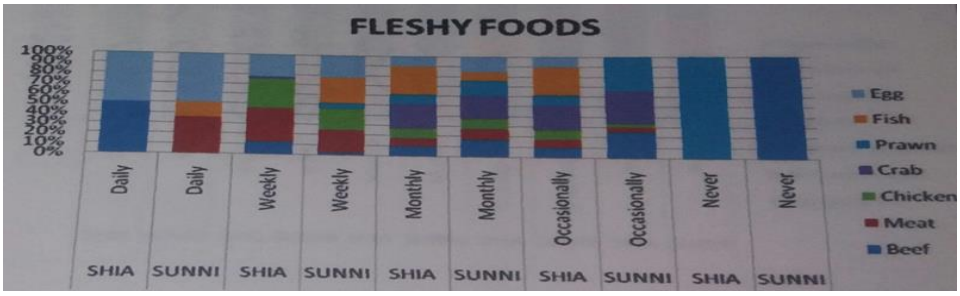

Fig 7: Fleshly foods consumption of Shia and Sunni Muslim obese women

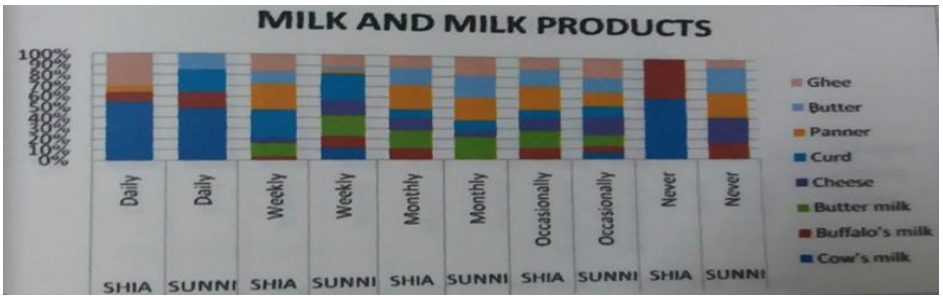

Fig 8: Milk and milk products consumption of Shia and Sunni Muslim obese women

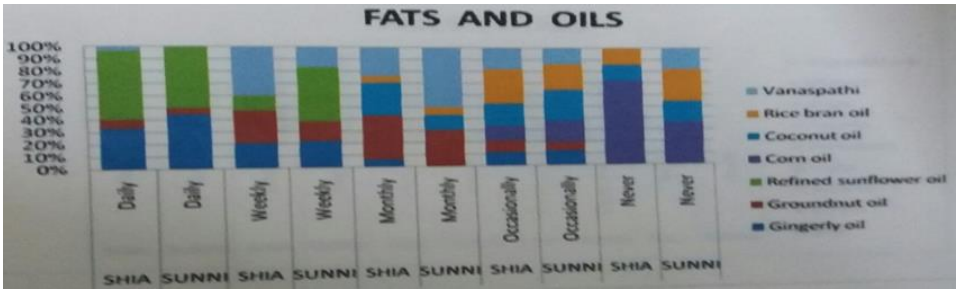

Fig 9: Fats and oils consumption of Shia and Sunni Muslim obese women

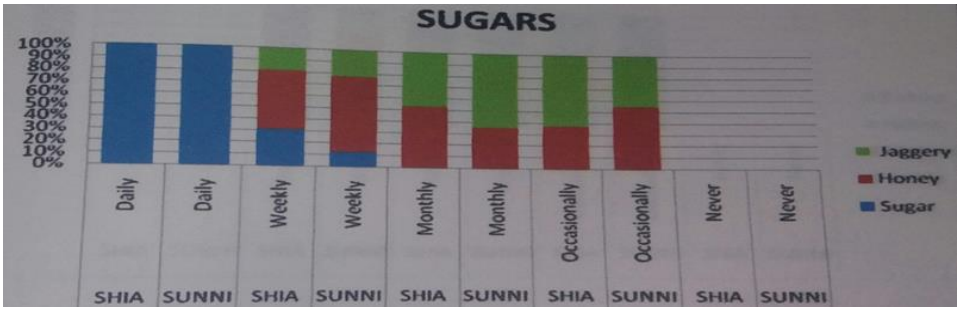

Fig 10: Sugars consumption of Shia and Sunni Muslim obese women

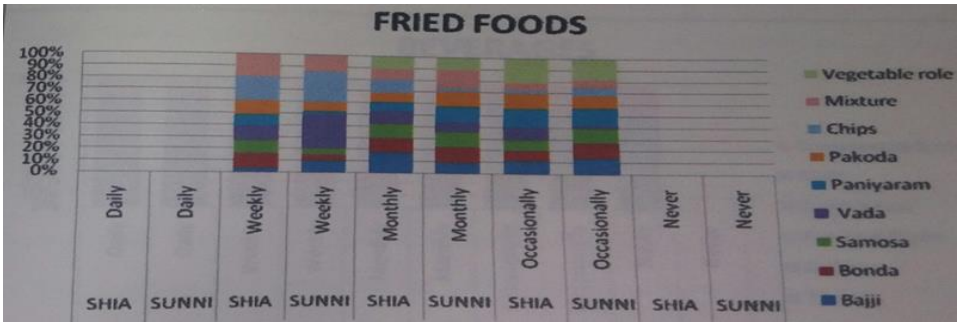

Fig 11: Fried foods consumption of Shia and Sunni Muslim obese women

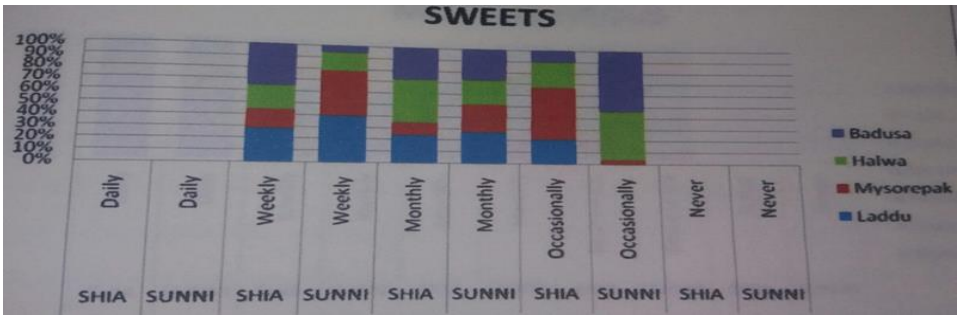

Fig 12: Sweets consumption of Shia and Sunni Muslim obese women

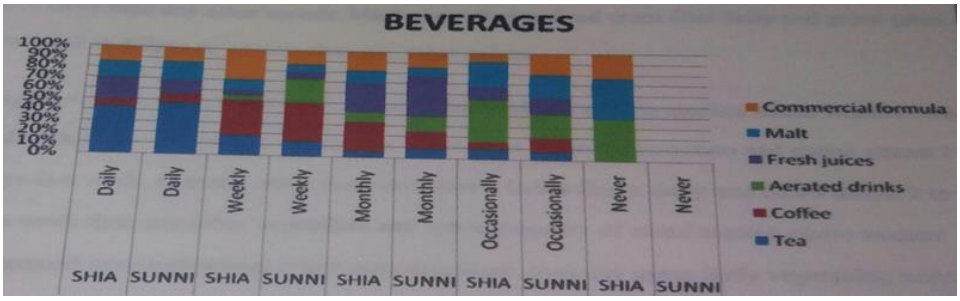

Fig 13: Beverages consumption of Shia and Sunni Muslim obese women

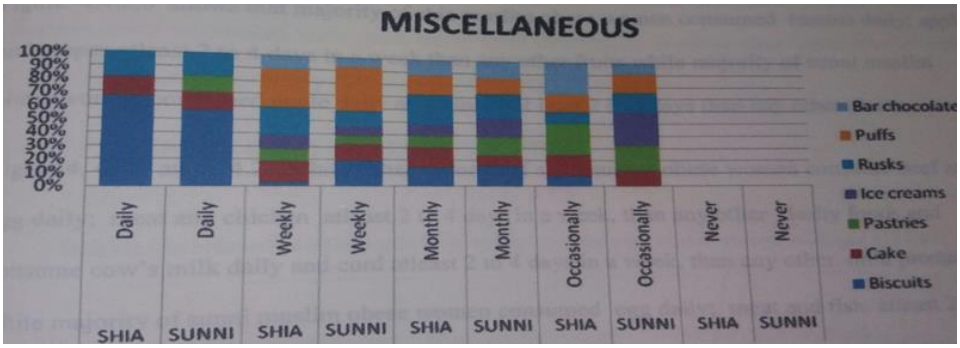

Fig 14: Miscellaneous foods consumption of Shia and Sunni Muslim obese women

From the figure (1 and 2) shows that majority of Shia Muslim obese women consumed wheat daily than any other cereals, bengal gram whole daily and rajma atleast 2 to 4 days in a week, than any other pulses while majority of Sunni Muslim obese women consume rice daily than any other cereals, black gram dhal and red gram dhal daily and green gram dhal atleast 2 to 4 days in a week, than any other pulses.

Figure 3, 4 and 5 shows that majority of Shia Muslim obese women consume palak than any green leafy vegetables, consumed onion daily, potato and radish atleast 2 to 4 days in a week, than any other roots and tubers, ladies finger daily and beans atleast 2 to 4 days in a week than any other vegetables and while majority of Sunni Muslim obese women consumed amaranth atleast 2 to 4 days in a week, than any green leafy vegetables, onion daily; potato and carrot atleast 2 to 4 days in a week than any other roots and tubers; brinjal daily; plantain and beans atleast 2 to 4 days in a week than any other vegetables.

Figure 6 shows that majority of Shia Muslim obese women consumed banana daily; apple and grapes atleast 2 to 4 days in a week than any other fruits while majority of Sunni Muslim obese women consumed apple daily and banana atleast 2 to 4 days than any other fruits.

Figure 7 and 8 shows that majority of Shia Muslim obese women consume beef and egg daily; meat and chicken atleast 2 to 4 days in a week, than any other flesh foods and consume cow's milk daily and curd atleast 2 to 4 days in a week, than any other milk products while majority of Sunni Muslim obese women consumed egg daily; meat fish atleast 2 to 4 days in a week, than any other fleshy foods and consumed cow's milk daily and curd atleast 2 to 4 days in a week, than any other milk products.

Figure 9 shows that majority of Shia Muslim obese women consumed refined sunflower oil and gingely oil daily, than any other fats and oil.

Figure 10 shows that majority of Shia Muslim and Sunni Muslim obese women consumed sugar daily than any other sugars. Figure 11 and 12 shows that majority of Shia Muslim obese women consumed chips and mixture atleast 2 to 4 days in a week than any other fried foods and in sweets, badusha and laddu were consumed atleast 2 to 4 days in a week and the Sunni Muslim consumed vada and chips atleast 2 to 4 days in a week than any other fried foods and in sweets, laddu and mysorepak were consumed atleast 2 to 4 days in a week.

Figure 13 and 14 showed that majority of Shia and Sunni Muslim obese women consumed tea and biscuits daily than any other beverages and miscellaneous foods.

Muslim women were more likely to be overweight or obese than women from other religious groups (primarily Hindu). For the nutrition variables, women who daily consumed non green leafy vegetables were more likely to be overweight or obese than those who ate them weekly, occasionally or rarely (Paula L.G, Margaret E.B 2001) [12].

1.3 Nutrient Intake of the Subjects

Table 1: Nutrient intake of the subjects belonging to Shia and Sunni Muslim obese women

Nutrient	*Recommended dietary allowance	Shia Muslim obese women N=38	Sunni Muslim obese women N=30
Energy (K.cal/day)	1875	2245	2368
Protein (gram/day)	50	67.82	53.22

Fat (gram /day)	20	34.53	30.35
Calcium (milligram / day)	400	448.66	447.45
Iron (milligram / day)	30	41.39	34.28

*****National institute of nutrition

The intake of energy (2245 and 2368) Kcal/day, protein (67.82 and 53.22) gram/day and fat (34.53 and 30.35) gram/day were consumed by both the Shia and Sunni Muslim obese women subjects in higher amount than the recommended dietary allowance.

The calcium (448.66 and 447.45) milligram/day and iron (41.39 and 34.28) milligram/day requirement of the individual were met in higher amount.

Weight is gained when caloric intake exceeds energy needs. Important determinants of energy intake include portion sizes and the energy density of the food. High-fat foods, processed foods, and diets high in refined carbohydrates.

The study suggests that because of uncontrolled diet consumption and more sedentary life, women are becoming overweight and obese. This is the consequence of higher education and high standard of living, which are continuous by increasing (Cordain *et al*, 2005) [4].

2. Mean and T Values Depicting Dietary Intake of both Shia and Sunni Muslim Obese Women

Table 2

Nutrients	Shia N=38	Sunni N=30	't' Value	Level of Significance
	Mean ±Standard deviation	Mean ±Standard deviation		
Energy	2245±287	2368±428	1.419	NS
Carbohydrate	422.54±59.317	393.41±62.781	1.960	S**
Protein	67.82±10.132	53.22±14.852	4.808	S*
Fat	34.53±7.699	30.35±8.382	2.137	S**
Calcium	448.6689±79.54009	447.4573±72.61697	.065	NS
Iron	41.39±58.456	34.28±46.145	.545	NS

S* - Significant at 1 percent level
S** - Significant at 5 percent level
N.S – Not Significant

The data obtained from the above data inferred that carbohydrate and fat intake of both Muslim community obese women was statistically significant at five percent level, whereas the protein intake of both Muslim obese women community was significant at one percent level respectively.

The modern diet of developed and developing countries contains more fat and considerably less fibre than the recommended level. The food containing saturated fat resulted in greater weight gain compared to food containing unsaturated fatty acids (Piers *et al*, 2003) [13].

Summary and Conclusion

Food intake can be affected by many factors, including the price, portion size, taste, variety, and accessibility of foods. The method by which the food is prepared is also important. There are also strong cultural influences on the types of food consumed with some societies abstaining from particular types of food or only eating food if it has been prepared in a specific manner. A high fat diet enriched with saturated fatty acids is the common diet in developed and developing countries whilst in poorer countries the majority of people derive their calories from a vegetarian diet (Zellner D.A 2006) [20].

Majority of the Muslim consumed items like rice, dhal, potato, beef, egg, meat and chicken daily leading to increased intake of carbohydrates and energy similarly more amount of sunflower oil was used for all the preparation and they also consumed more amount of sugars in the form of sweets like badhusha, laddu and mysorepak. Fried items like vada and chips and bakery items like biscuits, puffs and pastries and beverages were also consumed more, resulting in high intake of fats.

Nutrients intake like energy, protein and fat were consumed by both the Shia and Sunni Muslim obese women subjects in higher amount than the recommended dietary allowance. The calcium and iron requirement of the individual were met in higher amount.

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