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## Impact of nutrition education programme on college going girls engaged in sports activity

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### Abstract

Sports nutrition is a marginalized area of study yet nutrition plays a major role in good sportsmanship. Sport nutrition focuses on the link between diet, nutrients and performance. The widely separated, irregular food intakes and the increasing use of foods with low energy concentration can lead to poor performance. Therefore the study was planned with the main objective to impart nutrition education to college going girls engaged in sports activity. A need felt nutrition education programme was developed after the assessment of nutrition knowledge of the female education programme developed in which several Information Education and Communication material was prepared like poster, chart, flash card, leaflet/pamphlet, power point presentation, folder. The results of the anthropometric measurement showed that majority (74%) of the selected sports female were normal weight. The study showed the sports person lack nutrition knowledge. Nutrition education intervention improved their mean awareness score from 7.62 to 29.42 which

**Keywords:** Sports female, sports activity, nutrition education

### 1. Introduction

Nutrition is a most important key in our life and developing and maintaining good health. Essential nutrients includes carbohydrate, protein, fat, vitamin, minerals and water. Normally 85% of daily energy use is from carbohydrates and fat and remain 15% from protein. Required amount of essential nutrients according to age and the state of the body. Sports nutrition is a specialization within the field of nutrition that partners closely with the study of the human body and exercise science. Differences may exist in specific nutrients needs along this designated spectrum of sports person creating the exiting challenge of individualizing sports nutrition plans (Heather. *et al*, 2003) [8]. Sports nutrition is a marginalized area of study yet nutrition plays a major role in good sportsmanship. Sport nutrition focuses on the link between dietary nutrients and sports person performance (Burke. 2004) [2].

#### 1.1. Nutrition and Sports

Nutrition an important part of many sports training regimens, it is most commonly considered in strength sports (such as:- weight lifting and body building) and endurance sports (for examples :- cycling, running, swimming, hand ball, hockey, football, archrie and basketball). Diet has an important role to play in optimizing the performance of those who undertake regular training to improve performance. Many individuals take part in exercise at a different level, usually with the aim of maintaining health or assisting in the loss of weight (Shreelakshmi. 2008) [17].

#### 1.2. Nutritional requirement for sports person

During exercise, the energy demands of muscle contraction will fluctuate enormously. For muscle contraction to occur, chemical energy stored in the form of adenosine triphosphate (ATP) must be converted into mechanical energy needed by the muscles (Maugham. 2000) [10]. Carbohydrate is a primary fuel for high intensity exercise. The body ability to store carbohydrate, primarily in the form of glycogen in the muscles and liver is limited and insufficient. The person involved in sports activity has to maintain their glycogen stores by consuming approximately 65-70% of total daily energy from carbohydrate (Burke. 2004) [2]. The recommended daily carbohydrate intake for athletes ranges from 6-10 g/kg body weight

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(Rodriguez. 2009) [14]. Sports person engage in activity are required for higher level of protein intake than 0.8 g/kg body weight per day, regardless of the mode of exercise (endurance, resistance, etc) or training ( recreational, moderately or well-trained) (Khoury. *et al.*, 1999) [9]. Fat is needed to help access the stored carbohydrate (glycogen). Fat intake for a sport person should range between 20-35% of total daily calories. Current dietary guidelines recommend that 10% of fat intake should come from monounsaturated sources, 10% from polyunsaturated sources, and no more than 10% from saturated fat (Rodriguez. *et al.*, 2009) [14]. About 99 percent of the calcium in the body is stored in the skeletal system, while the remaining 1 percent is present in other cells, such as muscle cells (Speich. 2001) [18]. Calcium intakes ranging from 800-1200 mg/day which has a main role in the prevention of stress fractures both of the elderly and elite female sports person (Nielsen. *et al.*, 1998) [12]. The iron intake is 15-18 mg/d. and 10-15% iron to a absorbed your body. Good iron rich sources included in a diet such as:- green leafy vegetables, amla, meat, til and beetroot (Deakin. 2000) [4]. Optimal hydration can be achieved by drinking 150-350ml of fluid every 15-20 minutes during activity (Maughan. *et al.*, 2006) [11].

**2. Objective**

The purpose of this study was to Impact of nutrition education programme on college going girls engaged in sports activity.

**3. Material and Methods**

**3.1. Participants**

The participants of the study was 50 sports female aged between 18-23 years, of The IIS University Jaipur through purposive random sampling method. The sports female were selected on basis of their willingness or interest to participant in the study, open discussion was done to create awareness and interest to impart basic importance of nutrition education in daily life.

**3.2. Development of Tool**

The interview schedule was designed to obtain information from all sports female, on their General Information such as :- educational qualification, religion, type of family, height, weight, BMI (basal, metabolic index), socioeconomic background and food habit, Assessment of Nutritional Knowledge and Health care Practices. Nutritional knowledge profile included the data about the nutrients and dietary assessment. The attention information on food consumption pattern sports female was gathered, the intake of macro nutrients and micro nutrients were also gathered.

**3.3. Nutrition Education**

Nutrition education programme was developed for sports female, consisting of four hours in a week. The association class included power point presentation-sports nutrition knowledge, causes, importance, problems, charts-importance, poster-problem, nutrients knowledge, body cleaning, foods knowledge, pyramid-five foods group and bulletin board-sports related information. Pamphlets and brochure were also distributed at the end of the programme. The sports female were evaluated before and after the nutrition intervention programme using a standard questionnaire.

**3.4. Data Collection and Analysis**

Each sports female was given the schedule to complete using as much time as important to answer all the questions. The data collected are tabulated, statistically, results was compiled and presented along with supported discussion and final report prepared.

**4. Results and Discussion**

Results pertaining to the demographic information of the selected sports female are given in Table. 1

**Table 1:** Demographic information of the sports female N=50

S. No	Particulars	Per Cent
1.	<b>Age</b>	
	18-19	20
	20-21	60
2.	<b>Religion</b>	
	Hindu	94
	Muslim	4
	Sikh	0
3.	<b>Family type</b>	
	Nuclear	70
4.	<b>Type of home</b>	
	Own	98
	Rented	2

The results of the table revealed that the majority of the subject belong to Hindu religion 94%, Muslim 4% and Christian 2% and there were no Sikh sports person in the college. The type of family of the subject showed that 30% belongs to joint family followed by the majority of 70% from nuclear family. Several researchers have reported information related to religion in their study (Sangeetha. *et al.*, 2012) [16] carried out a study in which out of total 100 sports person the major religious category among the selected sports person was Hindus 77%, 12% were Christians and 1% belonged to Muslim community. And total 100 sports person the family type of the subject showed 54% sports person hailed from nuclear family back ground, while 46% from joint family system. The type of home subjects majority shows that there are 98% had their own houses and 2% lived in rented house.

**4.1. Anthropometric Measurement**

**Table 2:** Anthropometric Measurement of the Selected Sports Female

S. No	Particulars	Height (cm)	Weight (cm)
		Mean ± SD	Mean ± SD
1	Female (N=50)	156±11.7	45±8.1

Body weight is the most widely used sensitive and simplest reproducible anthropometric measurement for the evaluation of nutritional status of individuals. It indicates the body mass and is a composite of all body constitutes like water, minerals, fat, proteins and bone. It reflect more recent nutritional status of the individual. It is considered an index of chronic long duration malnutrition (Sangeetha. *et al.*, 2012) [16]. The mean height and weight of selected sports female was found to be 156±11.7 and 45±8.1 respectively.

**Table 3:** Body Mass Index (BMI) of the selected Sports Female

S. No	Bmi Classification	Bmi Sd	% Sample (N=50)
1	Underweight	< 18.5	10
2	Normal	18.5-24.9	74
3	Pre Obese	25-29.9	14
4	Obese Grade 1	30-34.9	00
5	Obese grade 2	35-39.9	00
6	Obese grade 3	40 above	2

BMI is a relative body weight assessment and widely accepted tool in determining obesity. The BMI value is shows that the majority of sports females were normal 74% and rest indicate the minimum percentage of pre obese 14%, there are 0% obese grade I and obese grade II and obese grade III. Several researchers have reported information related to BMI in their study. Cotugna.2003 highlighted that 32% of the athletes were overweight; 17% were obese and 25% t of adult males and 73% of adult females had a high risk waist circumference.

**4.2. Dietary Practices**

**Table 4:** Dietary Habits of Selected Sports Female N=50

S. No	Particulars	Per Cent
1	<b>Diet</b>	
	Vegetarian	40
	Non-vegetarian	26
2	<b>Ovo-vegetarian</b>	34
	<b>Carbohydrate loading before event</b>	
	Always	90
3	Rarely	10
	<b>Nutrients consumption</b>	
	Fat, Protein, Carbohydrate	10
4	Vitamins, Minerals, Water	15
	All	65
	Don't know	10
5	<b>Preference of junk food</b>	
	Bakery item	50
	Chat	30
6	Others	20
	<b>Daily meal pattern</b>	
	Three	20
7	Four	20
	Above four	55
	Don't follow any meal pattern	5

The above table shows that 40% sports female were vegetarian, 26% were non-vegetarian and 34% were ovo-vegetarian and on the basis of carbohydrate loading before event the 90% sports female were always agree but 10% were rarely agree. On the basis of nutrients consumption 10% sports female consumed fat, protein, carbohydrate and 15% consume vitamins, minerals, water, and 65% sports female consume all of them nutrients and 10% sports female don't know about the nutrients. 50% sports female prefer junk food like bakery item, 30% eat chat and 20% take other item. On the basis of daily meal pattern 20% sports female take three daily meal pattern, 20% take four meal pattern, 55% female take above four meal pattern and 5% don't follow any meal pattern. Several researchers have reported information related to dietary practices in their study Frary.2001 carried out a study in which out of 100, total 77.5% of participants ate junk food daily and the majority consumed junk food several times a day. In the present study, almost all participants had preference for junk foods and 54% preferred bakery items. The data is not surprising considering the prevalence of fast food in today's world.

**Table 5:** Sports profile of the selected Sports Female N=50

S. No	Particulars	Per Cent
1	<b>Type of Sport Involved</b>	
	Foot ball	20
	Hockey	18
	Hand ball	22
	Basket ball	22
2	Volley ball	18
	<b>Practice session</b>	
	Only morning	20
3	Only evening	0
	Both morning and evening	80
	<b>Meritorious achievement college level</b>	
4	Inter university level	20
	District level	40
	State level	30
	National level	10

The above table shows that 20% sports female likes to play football, 18% hockey, 22% hand ball, 22% basketball and other 18% are like to play volley ball. In the practice session 20% sports female like to practice in the morning only and no one like to play in the evening but 80% female like to practice both morning and evening. On the other hand we see that the achievement on the college level of 20% play inter university level game, 40% play district level, 30% play state level and other 10% sports female play at the national level.

**Table 6:** Food habits of the selected Sports Female N=50

S. No	Particulars	Per Cent
1	<b>Balance diet</b>	
	All nutrients in food	67
	Cereals and pulses combination	20
	Milk products	10
2	Don't know	3
	<b>Energy rich source</b>	
	Carbohydrate	75
	Protein	10
3	Fat	10
	Don't know	5
	<b>Protein rich sources</b>	
	Milk	30
4	Pulse	60
	Vegetables	5
	Don't know	5
	<b>Iron rich sources</b>	
5	Bajra	52
	Apple	10
	Green leafy vegetables	35
	Don't know	2
6	<b>Vitamin-A rich sources</b>	
	Yellow fruits and vegetables	80
	Fast food	3
	Milk	13
7	Don't know	4
	<b>Calcium rich sources</b>	
	Milk and milk products	85
	Vegetables	5
8	Cereals	8
	Don't know	2
	<b>Fruit supply</b>	
	Fat	10
9	Protein	50
	Vitamins	35
	Don't know	5

The above table shows that there are some sports female who are very conscious about their diet, majority of the subjects knows the importance of balance diet. 75% females knows that carbohydrate is a rich source of energy. However some researchers Ousley, Pankhe *et al.* highlighted in their research that female swimmers deficient in carbohydrates. Hassidout *et al.* highlighted the that majority of the female athletes are not consuming balance diet. 60% girls have an idea that pulses and milk and milk products are good source of protein. Iron is another critical micro mineral which can lead to anemia and also affect performance. Majority of the girls also knows that bajra add green leafy vegetables are good source of iron. Above all yellow fruits and vegetables are that good source of vitamin A.

#### 4.3. Nutrition Education

**Table 7:** Impact of Nutrition Education on the Nutrition knowledge of Selected Sports person

	Number	MEAN	SD	't' value
Pre test	50	7.62	8.04	8.79*
Post test	50	29.42	15.6	

Sports female received most of their nutritional knowledge from parents, coaches, and peers, yet many sports female' knowledge were lacking and incorrect (Rust. 2002) [15]. The lack of accurate information may lead to an increased chance of sports female developing one or more aspects of the female athlete triad due to poor food choices and the resultant nutritional inadequacies mentioned previously (Barbara. 2009) [1]. The above table indicates that the co-relation between pre-nutrition and post-nutrition knowledge which was highly significant (t value is significant at 8.79\*). The mean value of the pre test is (Mean=7.62) and on the higher side the mean value of the post test is (Mean=29.42).

#### 5. Conclusion

The participant of the present study had less nutrition knowledge. Nutrition knowledge intervention has definitely created awareness among the selected sports female which in long run help to improve their nutritional status and their performance during sports activity. Therefore, we have to give the knowledge to our nation and our whole community for the better education and their good health. So the nutrition of the sports person is very important for the good health, strength and their growth and development of the body. Nutrition education has definitely improved the nutritional knowledge of the selected sports female.

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