

Knowledge and Perception about Ketogenic Diet among Medical Students

Muhammad Umair Butt¹, Mohammad Danyal Bawa², Hina Ahmed³

ABSTRACT

Background and Objectives: Ketogenic diet has gained lotre cognition nowadays through its various health implications; it is extensively used for weight reduction besides its therapeutic use in other diseases. The diet constitutes high-fat, low-carbohydrates that utilize fats for metabolism. The objective of the study was to determine the Knowledge and Perception about ketogenic diet, its therapeutic uses, side effects and benefits among medical students of Fatima Memorial College.

Methods: This was a cross sectional study conducted at Fatima Memorial Hospital, College of Medicine and Dentistry, Lahore. The duration of study was 6 months from July 2019 to December 2019. A total of 250 students of MBBS were interviewed after taking informed consent through a structured questionnaire and data was analyzed statistically.

Results: A total of 250 participants were interviewed. Among all 183 (73.2%) of the participants heard about ketogenic diet, and 52 (20.8%) knew the difference between could differentiate ketogenic diet and fasting. Most of the participants 102 (40.8%) were aware about its high fat and low carbohydrate content. Out of 250 participants, 191 (76.4%) and 147 (58.8%) agreed weight loss and cardiovascular disease the main therapeutic aim for taking this diet however, 144 (57.6%) had a perception that elderly cannot take this diet. Most of the participants 146 (58.4%) and 139 (55.6%) considered hair fall and acidosis as main adverse effects of the diet to the human body respectively.

Conclusion: The study shows that medical students had compelling knowledge about ketogenic diet's therapeutic uses, side effects and benefits on the body. Weight loss was observed as the most important factor for choosing it. Pre-diet counseling came out to be valuable as a guide towards people thinking for adopting this diet.

KEYWORDS: Ketogenic diet, Awareness, Weight loss, Medical students.

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1. Muhammad Umair Butt
 2. Mohammad Danyal Bawa
 3. Hina Ahmed

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1-3 Fatima Memorial College of Medicine and Dentistry, Lahore-Pakistan.

Corresponding Author:
Muhammad Umair Butt
Final Year MBBS Student
Fatima Memorial College of Medicine and Dentistry, Lahore-Pakistan.
Email: buttumair87@gmail.com

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INTRODUCTION

Ketogenic diet is used to treat many metabolic disorders and weight reduction and is well recognized these days.¹ It utilizes fat instead of carbohydrates for energy metabolism.² When the body is in carbohydrate depleted state where there is no glycogen available to replete the glucose

molecules for energy generation, the body enters in a state of ketosis and starts to take fat for energy production which burns the fat in the body.³

Ketogenic diet is a high fat low carbohydrate diet with the carbohydrate content less than 10%.³ This diet was first introduced in 1920's for the treatment of epilepsy.⁴ Dietary modifications is used as an adjuvant therapy among many diseases like cancer.⁵ Similarly ketogenic diet has various health implications among which weight loss is the major reason many people take this regimen, the overall benefits of the diet include treatment of polycystic ovarian disease, epilepsy, diabetes, cardiovascular diseases, cancer etc.^{4,6-8} However there are also associated side effects of adopting this diet that include keto flu. The side effects range from short to long term ranging from lethargy, fatigue and headache to other known complications include constipation, acidosis, dehydration, dyslipidemias, growth retardation, kidney stones and osteoporosis etc.⁶

Many people want to lose weight in a period of minimum time and ketogenic diet is proven to be an efficient way to achieve this as it produces wanted results in short duration using calculated amount of nutrients in the diet.⁹ However a pre-dietary counseling addressing the medical and psychosocial issues is required prior to starting this diet so that motivation can be provided to the people starting this diet.¹⁰ College students tend to gain weight throughout the years and become obese in the future thus they are the ones at high risk. Many students use different other ways to lose weight among which changing eating habits, physical exercise, slimming programs, and herbal teas are the ones at the peak.¹¹

People are becoming weight conscious these days and going for various techniques for maintaining their weight especially by using different diets for certain ailments. Therefore, this study is conducted to determine the knowledge and perception about ketogenic diet, its therapeutic uses, side effects and benefits on the body among students of Fatima Memorial College of Medicine and Dentistry, Lahore.

METHODS

This was across-sectional study conducted at the Fatima Memorial College of Medicine and Dentistry, Lahore from July 2019-December 2019 for duration of 6 months where MBBS students between age group of 19 – 24 years were interviewed. Sample size was calculated by using the World Health Organization calculator, keeping in mind that 50% of the students will be having perception about the ketogenic diet calculated. A total of 250 students were included. The students were taken into proportion from 1st, 2nd, 3rd and 4th and final year MBBS through proportionate sampling technique. The students who were not in MBBS and not in 19 – 24 years age group were excluded from the study. They were interviewed after taking informed consent through a structured questionnaire that was comprised of a set of 18 questions focusing regarding Knowledge and Perception of ketogenic diet, its therapeutic uses, side effects and health benefits. Ethical approval to conduct research was obtained from institutional review board at Fatima Memorial Medical and Dental College Lahore vide letter No. (IRB # FMH-05-2019-IRB-631-M).

STATISTICAL ANALYSIS

All relevant data was collected through a structured questionnaire and subsequently entered and analyzed through Statistical Package for Social Sciences (SPSS) version 21. Means and standard deviations were calculated for quantitative variables like age. For categorical variables like question focusing the perception about ketogenic diet, frequency and percentages were calculated. Chi square was used to determine the significant associations. The *P*-value of ≤ 0.05 was considered significant.

RESULTS

A total of 250 participants were interviewed having a mean age of 21.48 (± 1.479) and mean weight of 65.64 (± 15.378) kg. Out of 250 participants 141 (56.4%) tried to lose weight through exercise and different diets. Among all participants 198 (79.2%) agreed for pre-diet counseling before starting any diet and 183 (73.2%) of the

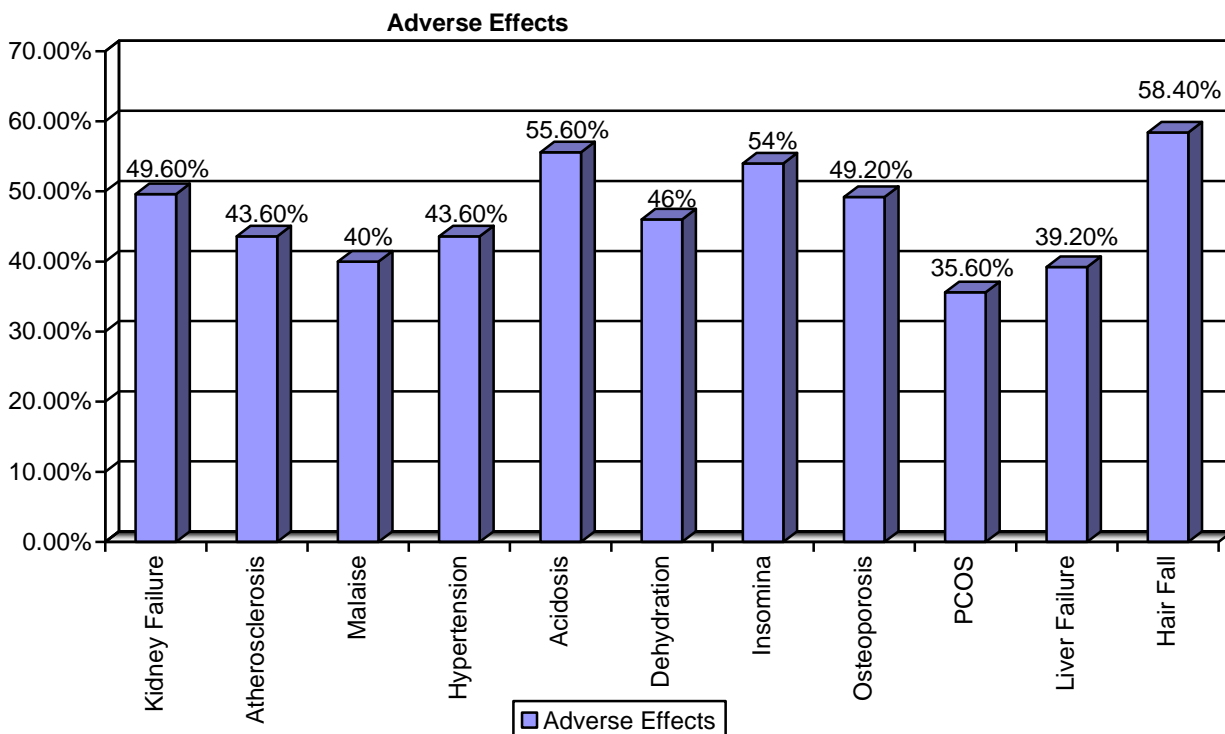


Fig.1: Knowledge about adverse effects of ketogenic diet.

respondents already knew about ketogenic diet before. Only 52 (20.8%) participants could differentiate ketogenic diet from fasting and 75 (30%) believed keto diet better than exercise to achieve desired goal. Out of all participants 102 (40.8%) were aware about high fat and low carbohydrate content in diet and 181 (72.4%) answered fat as a main component of ketogenic diet used by body to produce energy. According to 191 (76.4%) and 147 (58.8%) participants, weight loss and cardiovascular disease were the main therapeutic purpose for choosing this diet among the people (Table-1). Apart from these, 60 (24%) and 128 (51.2%) participants were aware of therapeutic role of ketogenic diet for polycystic ovarian disease and sleep disturbance respectively (Table-1). However, 144 (57.6%) and 136 (54.4%) participants had a perception that elderly and patients having metabolic syndrome cannot take this diet respectively. Recognizing the main adverse effects of the diet to the human body 146 (58.4%) participants perceived hair fall to be the leading side effect and 139 (55.6%) agreed for acidosis (Fig:1).

Regarding the changes in the biochemical

profiles 169 (67.6%) participants believed that it increases high density lipoprotein levels in the blood of the people continuing this diet. Although 171 (68.4%) participants thought that there is always a psychological impact that the weight might regain but when asked about their view on difficulty in remaining compliant to the diet, 171

Table-1: Knowledge and Perceptions about Health Benefits and Therapeutic Role of Ketogenic Diet.

Factors	N (%)	P-value
Therapeutic role of this diet?		
Weight loss	191 (76.4%)	0.296
PCOD	95 (38%)	0.891
Epilepsy	60 (24%)	0.016
Cardiovascular diseases	147 (58.8%)	0.968
Diabetes	136 (54.4%)	0.357
Sleep Disturbances	128 (51.2%)	0.47
None	28 (11.2%)	0.173
Increase surge?		
Increase in obesity	149 (59.6%)	0.298
Increase in prevalence of chronic diseases	103 (41.2%)	0.062
Psychological implication to remain slim	158 (63.2%)	0.256
Helps in multiple domains	119 (47.6%)	0.029
Increase awareness	137 (54.8%)	0.438
Social Status	160 (64%)	0.358

(68.4%) replied that people starve too much. Also 149 (59.6%) participants believed that this diet is gaining fame due to increasing obesity these days (Table-1).

DISCUSSION

Pakistan is facing an emerging epidemic since few decades that is obesity, simultaneously, ketogenic diet has gained momentum in the past few years all over the world mainly as a strategy for weight loss.^{10,12}

When assessing the main therapeutic aim of the diet more than half of the participants (76.4%) used to lose weight which was supported by a study conducted among college going students at Kent University. It was perceived that this diet could be mainly used for weight loss purpose as it shifts the metabolism of the body and uses fats instead of carbohydrates for energy production.¹³ It has been found that initially ketogenic diet was used to treat epilepsy since 1920 because of antiepileptic effects of fatty acids and a shift in the neurotransmitter synthesis.¹⁴ In future more prospective studies will clarify the perception of major therapeutic aim of this diet. The current study found that 79.2% participants were in the view of pre diet counseling as an integral part of this regime. Likewise, Rosha et al.¹⁵ highlighted the need of 5 rubric model of the keto counseling which include rapport, realistic realization, reliability, readiness to change, and relationship must be explored and improved during the process of counseling for effective and successful outcomes. It can guide people towards efficient and healthy way to achieve their goals and should be emphasized further.

The current study showed increase levels of High-density lipoprotein (HDL) cholesterol among ketogenic diet users. It was supported by a study conducted on obese patients in which triglycerides level were monitored throughout and HDL cholesterol was high in the blood as compared to Low-density lipoprotein (LDL) cholesterol due to long term use of keto diet.¹⁶ This would be a major health benefit for the those thinking about this diet as it maintains the blood biochemical levels normal. The current study reflected that most of the participants were against the use of this diet by elderly people because of frail health and co-morbid diseases that is in accordance to another

study.⁶ Presence of co-morbid diseases to the harmful effect of change in the shift of body's metabolism as there is already a strain on them due to the underlying disease.

In current study, more than half of the participants knew about highest composition of fats in ketogenic diet followed by protein and then carbohydrates, also fat is used as a main nutrient for energy metabolism. Similar perception reflecting the importance of using a high fat diet for effective health benefits and challenging diseases like epilepsy other than weight loss purposes is noticed. was observed in another study conducted in Pakistan on pediatric patients.¹⁷ Less than half of the participants believed that diet is better than exercise and also highlighted in a study in China among college going students.¹⁸ They had the same insight that college going students undergo stress and are more vulnerable to gain weight due to junk food hence diet is better than exercise with quicker results.¹⁸ Further studies are required to be carried out to clear out the distinction between the efficiency of diet and exercise. However physical exercise is of more valuable method to reduce the weight while comparing to dietary modifications like ketogenic diet which give quicker results but cannot be opted for long term use.

The current study showed fear of weight gain again and to maintain it as a major psychological impact about diet, similar facts were highlighted in another study.¹⁹ Yuen et al.²⁰ found acidosis as the most important adverse effect on the body due to prolong use of ketogenic diet that is in accordance to present study. For this reason, those doing ketogenic diet should have monthly follow-ups from physicians and nutritionists so that any query can be countered in timely fashion protecting themselves from any side effect. More than half of the students believed it was difficult to keep the compliance to the diet and it was also supported by an experimental study conducted by Light et al.²³ Ketogenic diet was reported as a stringent diet making difficult for the people to adhere with it that forced them to find another way to achieve their targets.²¹

CONCLUSION

The results of the present study show that medical students had compelling knowledge and perception

about ketogenic diet, its therapeutic uses, side effects and benefits on the body. Weight loss was observed as the most important factor for choosing this diet. Pre-diet counseling is very valuable for everyone as a guide so that people get to know every aspect and correct technique for carrying out this diet.

LIMITATIONS OF STUDY

The limitations of the study are that only students of MBBS were enrolled and data were collected from a single medical college. In future, studies with larger sample size are recommended in which perception of students of other colleges and universities may also be evaluated.

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CONFLICT OF INTEREST

None to declare.

FINANCIAL DISCLOSURE

None to disclose.

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Author's Contribution

MUB, MDB: Conception of study, acquisition and interpretation of data, drafting the manuscript with critical revision.

HA: Critical revision of the manuscript for intellectual content.

ALL AUHTORS: Final approval of the version to be published.