



Ministry of higher  
Education. and Scientific Research  
University of Babylon  
/ College of pharmacy



## Educational awerance about ketogenic diet and their effect on health

Graduation project

Submitted to the Faculty of pharmacy University of Babylon as Part  
of the Requirement for Obtaining Bachelor's Degree in pharmacy

By

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(( يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا  
الْعِلْمَ دَرَجَاتٍ ))

صَدَقَ اللَّهُ الْعَظِيمَ

(سورة المجادلة - الآية 11)

## Dedication

We dedicated this search to the Almighty God, thank you for the guidance, strength, power of mind, protection and skills and for giving us a healthy life. All of these, we offer to you

This study is also wholeheartedly dedicated to our beloved parents, who have been our source of inspiration and gave us strength when we thought of giving up, who continually provide their moral, spiritual, emotional, and financial support.

To our brothers, sisters, relatives, mentor, friends, and classmates who shared their words of advice and encouragement to finish this study.

Those who, after God, were credited with this achievement, the doctors and professors of the College of pharmacy, University of Babylon

**Balsam**

**Baneen**

**Sajad**

**2024**

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## Abstract

### Background:

The ketogenic diet (KD) is a high-fat, adequate-protein, and very-low-carbohydrate diet regimen that mimics the metabolism of the fasting state to induce the production of ketone bodies ,

### Objective of the study

To assess the people Educational awerance about ketogenic diet and their effect on health.

### Materials and Methods:

An online, self-administered, anonymous, questionnaire based, cross-sectional survey was conducted via Google Forms, the study includes survey contain 30 questions, that published in self medication around Iraq, the research recruited 131 participation 122 of them at age of 15-25 and 9 of them at age 26-35 At period time from October 2023 to April 2024 Most of them female gender

### Result

The present results show that more participants in age (15-25)in (93.13%)And (68.7%)in urban areas,(91.6%)are single ,(68.7%)are Undergraduates and (70.99%)are gainer,(42.74%)of participants the source of income< 100.000 IQD and (87.7%)of people use the keto diet to lose weight,66.15%,started the keto diet at ages 15-20 years77.69%, of participants use exercise with keto diet. 55.38%of participants had knowledge about keto diet through commincation website

### Recommendations

Doing more health promotion and education ,Carrying out workshops and sessions to teach people about how to use the keto diet and benefits of the program.Carrying out research in other regions of Iraq and conducting research concerning the problem

**Key word** :keto diet ,Educational ,Awarance

# Chapter one

# Introduction

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## Chapter One: Introduction

### 1.1. Introduction

The ketogenic diet (KD) is a high-fat, adequate-protein, and very-low-carbohydrate diet regimen that mimics the metabolism of the fasting state to induce the production of ketone bodies [1] .

The KD has long been established as a remarkably successful dietary approach for the treatment of intractable epilepsy and has increasingly garnered research attention rapidly in the past decade immense popularity , primarily because of its successful short-term effect on weight loss., subject to emerging evidence of the promising therapeutic potential of the KD for various diseases, besides epilepsy, from obesity to malignancies. In this review, we summarize the experimental and/or clinical evidence of the efficacy and safety of the KD in different diseases, and discuss the possible mechanisms of action based on recent advances in understanding the influence of the KD at the cellular and molecular levels [2].



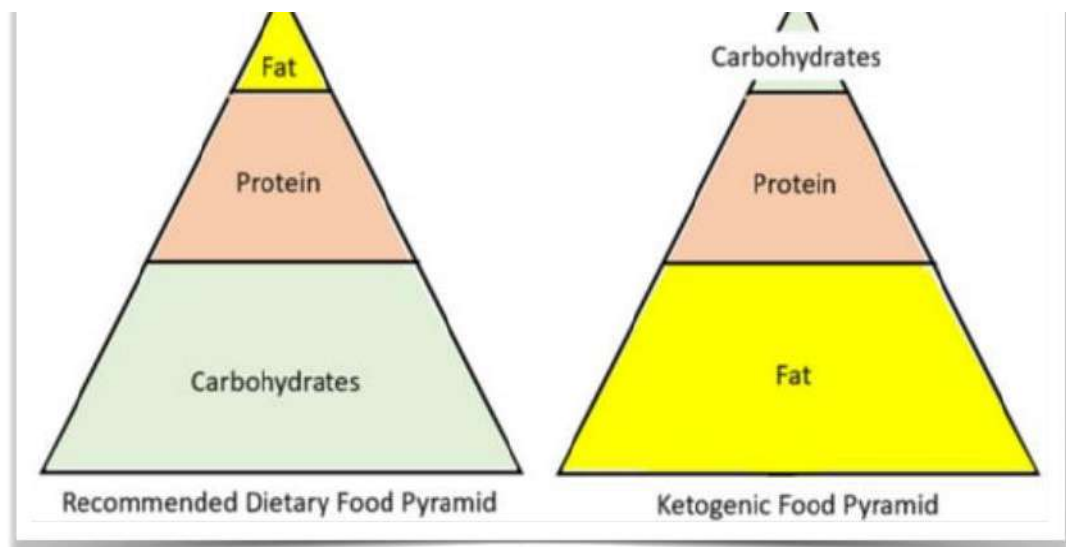


Figure 1 A comparison between recommended dietary food and ketogenic diet [4]

A visual comparison of recommended dietary food to ketogenic diet food. It is the weakest diet system in terms of nutritional quality. It helps you lose weight without the most important flaw in other weight loss systems, which is “Hunger” ...Fats take longer to digest, and they also make you feel full for longer periods from here came the idea of the keto diet.[5]

Then it enters ( Krebs Cycle) It's produce of NADH and FADH which initially provide the cell with energy. After that (ATP) is produced. When the body has too much acetyl-CoA, beyond the capacity of the Krebs cycle, which leads to the cessation of the Krebs cycle and the accumulation of acetyl-CoA, it enters a completely second path called ketogenesis . The body's new energy currency will be ketone bodies . [7]

Fasting and other dietary regimens have been used to treat epilepsy since at least 500 BC. To mimic the metabolism of fasting, the ketogenic diet

(KD) was introduced by modern physicians as a treatment for epilepsy in the 1920s. For two decades this therapy was widely used, but with the modern era of antiepileptic drug treatment its use declined dramatically.

By the end of the twentieth century this therapy was available in only a small number of children's hospitals. Over the past 15 years, there has been an explosion in the use, and scientific interest in the KD. This review traces the history of one of the most effective treatments for childhood epilepsy. [9]

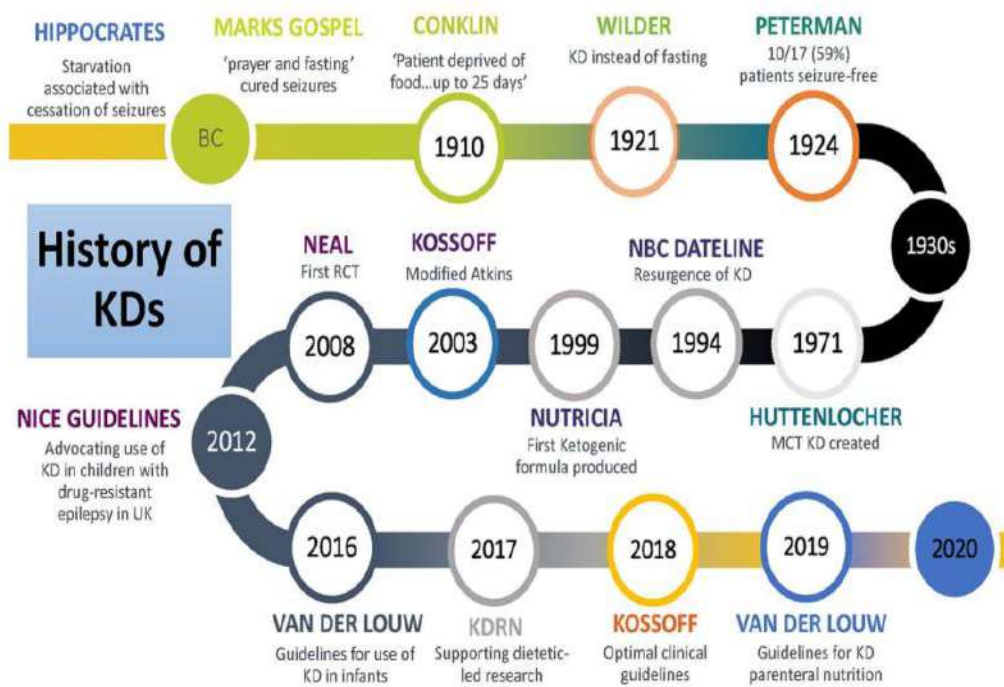
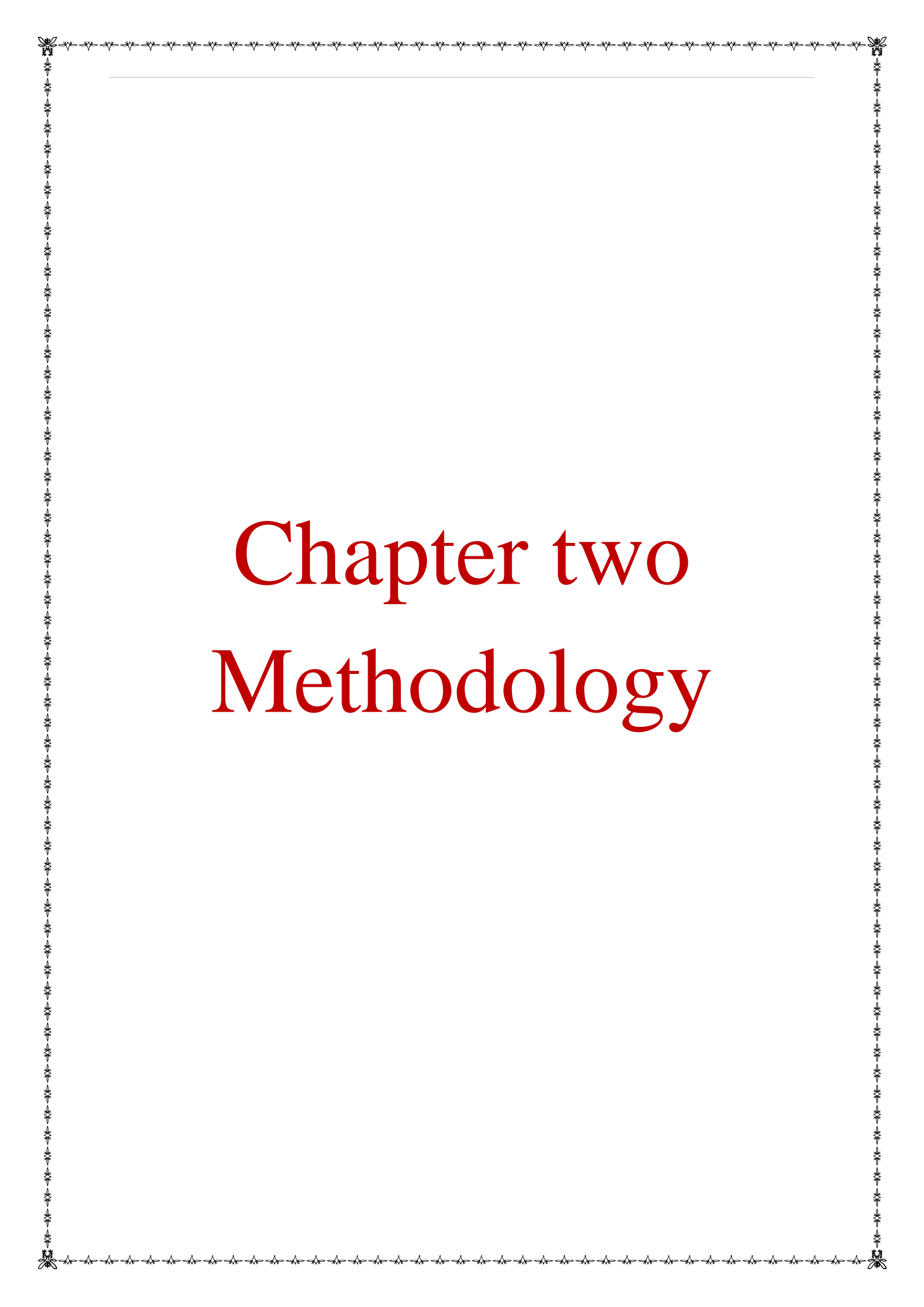


Figure 3 history of KDs [16]

### Objective of the study

To assess the people Educational awerance about ketogenic diet and their effect on health.



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# Chapter two

# Methodology

## Chapter Two: Methodology

### Materials and Methods:

An online, self-administered, anonymous, questionnaire based, cross-sectional survey was conducted via Google Forms, as questioners in appendix the study includes survey contain 30 questions, that published in self medication around Babylon, the research recruited 131 participation 122 of them at age of 15-25 and 9 of them at age 26-35 At period time from October 2023..... to April 2024 Most of them female gender

Geographic region of samples collection were selected in a stratified, random sampling design that It includes all segments of society.

The questionnaire consisted of demographic data and data about the Educational awerance about ketogenic diet and their effect on health.. A questionnaire, containing open-ended and close-ended questions, was administered to the subjects.

Data were analyzed using Microsoft excel (2016) in order to analyze and evaluate the results of the study

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# Chapter three

# Results

## Chapter three: Results

Table 1 Socio demographic data of using the keto diet among people

Factor	No. (%)	
<b>Age</b>	<b>Male</b>	<b>Female</b>
20-30yrs.	26	96
	122(93.13%)	
30-36yrs.	3	6
	9(6.87%)	
<b>Residence</b>	<b>Male</b>	<b>Female</b>
Urban	10	70
	90(68.7%)	
Rural	14	27
	41(31.3%)	
<b>Marital status</b>	<b>Male</b>	<b>Female</b>
Single	26	94
	120(91.6%)	
Married	3	8
	11(8.4%)	
<b>Academic level</b>	<b>Male</b>	<b>Female</b>
Undergraduates Stage	21	69
	90(68.7%)	
Postgraduate Stage	8	33
	41(31.3%)	
<b>Source of income</b>	<b>Male</b>	<b>Female</b>
As a gainer	21	72
	93(70.99%)	
employee	8	30
	38(29.01%)	
<b>Monthly Income</b>	<b>Male</b>	<b>Female</b>
< 100.000 IQD	8	48
	56(42.74%)	
100.000 – 500.000 IQD	12	31
	33(25.19%)	
500.000 – 1 Million IQD	7	17
	24(18.33%)	
> 1 Million IQD	2	6
	18(13.74%)	

The results of table 1 show that more participants in age (15-25)in (93.13%)And (68.7%)in urban areas,(91.6%)are single ,(68.7%)are Undergraduates and (70.99%)are gainer,(42.74%)of participants the source of income < 100.000 IQD

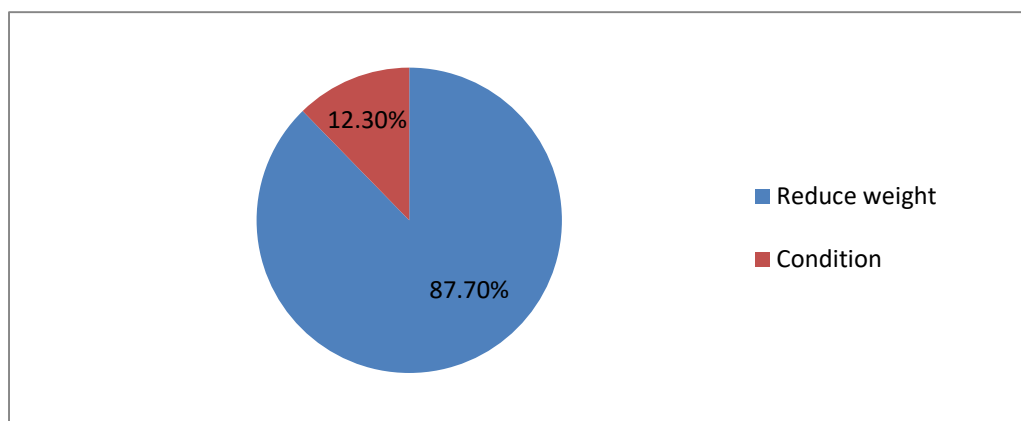


Figure 1 The purpose of the keto diet

We found that the highest percentage (87.7%)of people use the keto diet for the purpose of losing weight, and a low percentage ( 12.3 %)for a medical condition As In Figure 1.

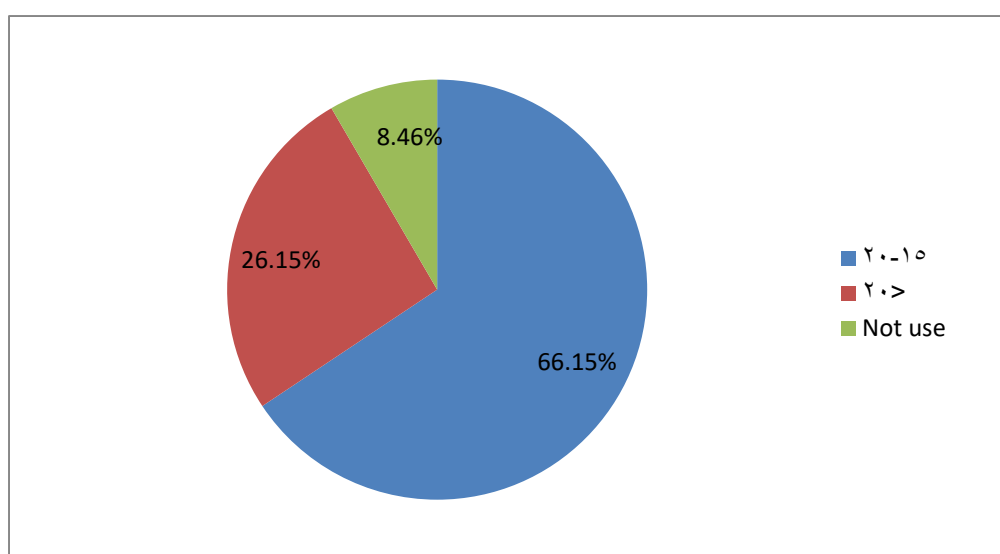


Figure 2 The age of start using keto diet

We found a high percentage who started the keto diet between the ages of 15 and 20 years, with a rate of 66.15%, and a percentage of 26.15% who started using it at the age of more than 20 years, and a percentage of 8.46% who did not use the keto diet As In Figure 2 .

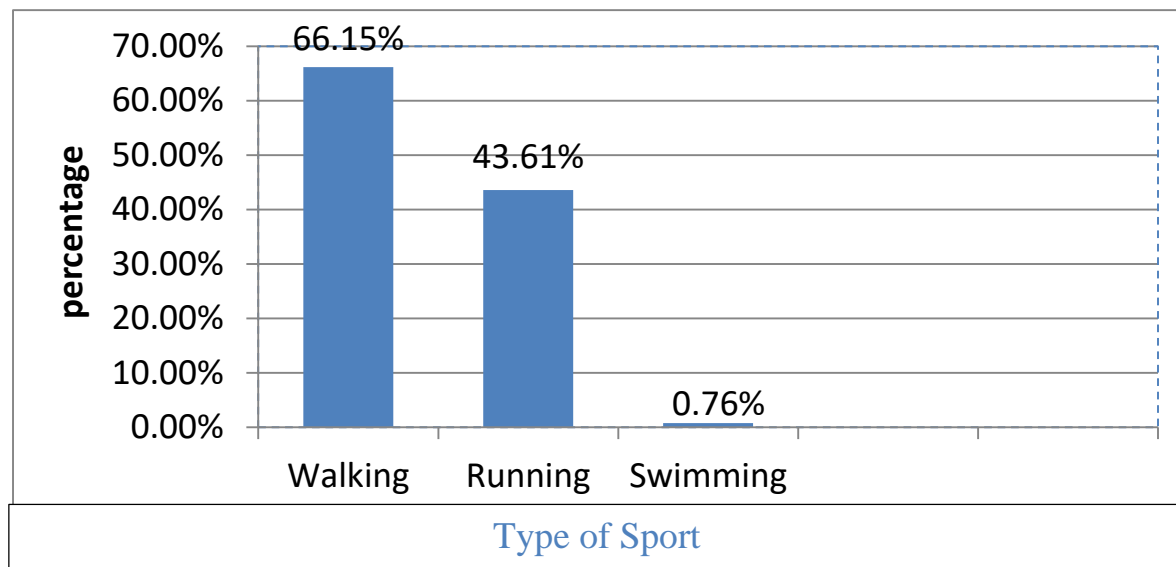


Figure 3 The Type of sports is accompanied with keto diet

We found a high percentage who practice walking with the keto diet at a rate of 66.15%, and a medium percentage practice running with the keto diet at 43.16%, and a low percentage estimated at 0.76% who practice swimming As In Figure.



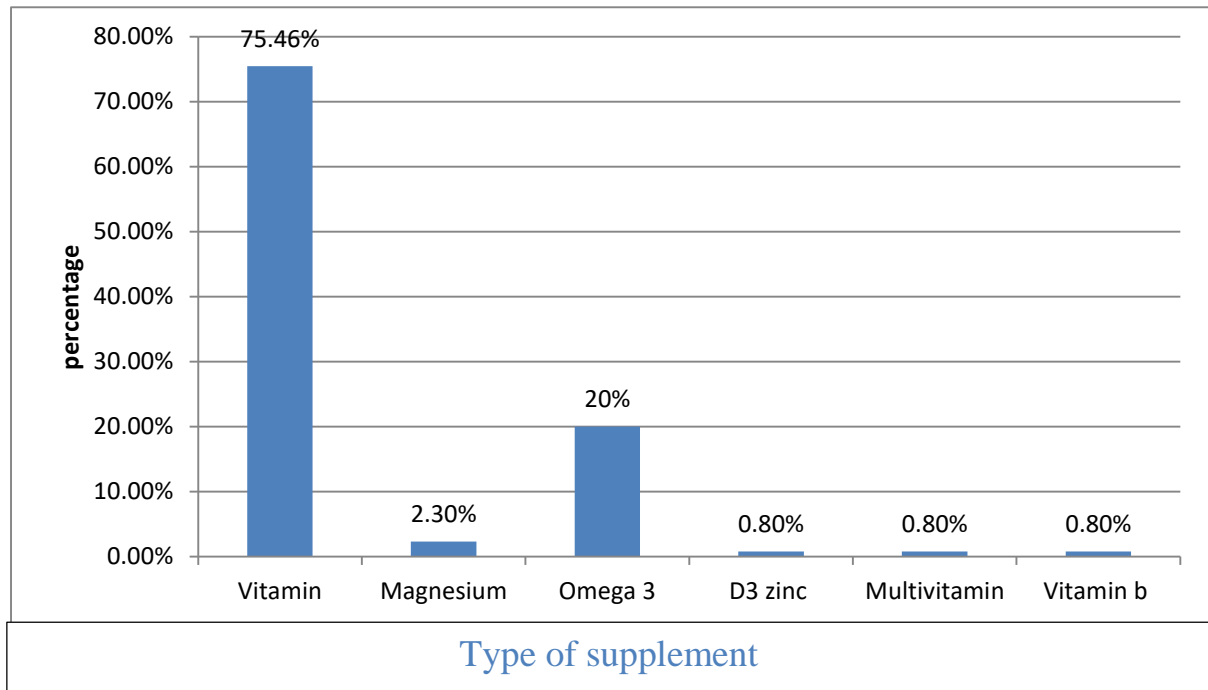


Figure 4 the Type of supplement have using with keto diet

We found a high percentage of 75.46% using vitamins with the keto diet, a percentage of 20% using omega 3, and a percentage of 0.8 using zink, d3, vitamins B, and multivitamins As In Figure.

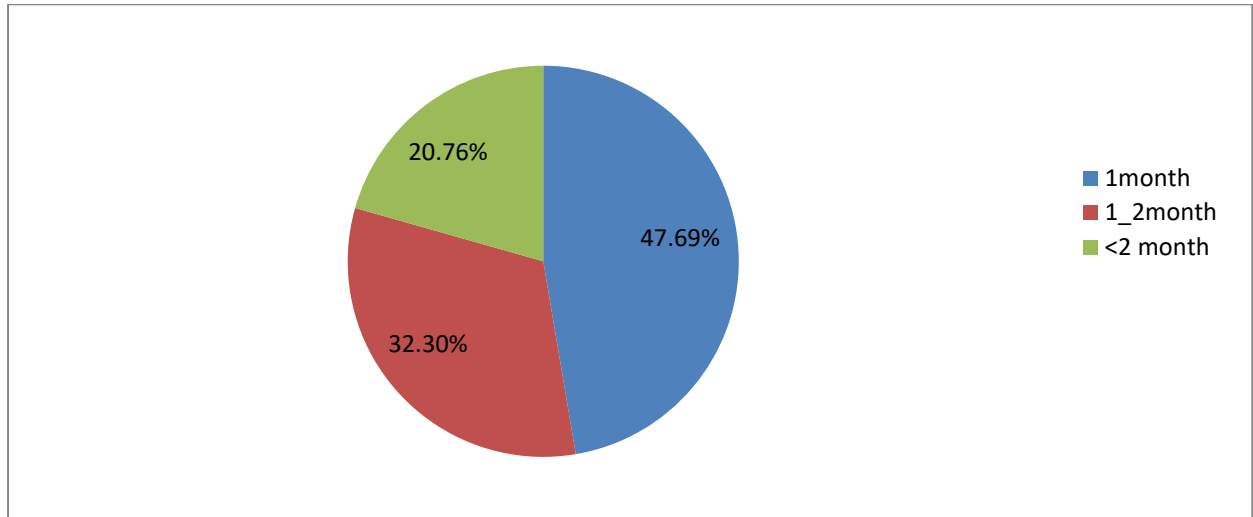


Figure 5 The number of month have the participant lasting on the keto diet

We found a high percentage of 47.69% who started using keto diet from one month, 32.30% from one to two months, and 20.76% for more than two months



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# Chapter four

# Discussion

## Chapter Four: Discussion

The results of this study are discussed as following with respect to supportive articles related to

The main finding of our study that the people had good knowledge about keto diet

The majority of responses were female 102 from 131 participants this is agree with (10) were the majority of participants were female in 83.7% There age are from 15-25yrs in 93.13% this is disagree with (11) were 60.3% of participants there age from 20-30 yrs. And majority of participants are single 91.6% this is agree with (12) were the single participants are 99.6% and living in urban area in 68.7% and most of participants there income are at 42.74% <100000IQD this is disagree with (12) were most of participants living in the village at 55.9% and there income 1500-30000NIS in 39.6% .

The majority of people are used keto diet to reduce weight at 87.7% this is disagree with (11) were just 55.6% of participants are use keto diet to reduce weight As In figure 1.

The majority of participants had known the keto diet from social media at 55.38% this is agree with, ( 11) were 66% of people had knowledge about the keto diet from social media As in figure 3.

The majority of participants at (77.69%) had been accompanied exercise with keto diet to have a good result this is agree with (13) were 58.4% of participants are used exercise with keto diet to have a good result As in figure 4.

The majority of participants used vitamins accompanied with keto diet in 75.46% this is disagree with (12) were 95.6% of participants had been used calcium and v d 3 As In figure 7.

The majority of participant had the common side effects of keto diet is headache in [57.69%]this is agree with (12) were 67.4% of participants had headache after continued in keto diet for long time As In figure 8 .

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Most of participants 62.30% losing weight <3kg when they are using keto diet this is agree with (13)most of the participants lost weight<3 kg while they are on the keto diet As in figure 14.

Most of participants at 57.69%having the excess weight lossing while in keto diet return when leaving the keto diet this is agree with (15) Weight loss but gained weight back afer leaving keto diet in 54.5% of participants As in the figure 22.



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# Chapter five

# Conclusions and Recommendation

## Chapter five Conclusion and Recommendation

### Conclusion:

The presented study Concluded that :-

- 1-The majority of people are used keto diet to reduce weight at 87.7%
- 2-The majority of participants had known the keto diet from social media at 55.38%
- 3-The majority of participants at (77.69%) had been accompanied exercise with keto diet to have a good result
- 4-The majority of participants used vitamins accompanied with keto diet in 75.46%
- 5-The majority of participant had the common side effects of keto diet is headache in [57.69%]

### Recommendations:

According to the output of this study its recommended that:-

- 1- The public should be aware of keto diet and doing more health promotion and education are required.
- 2- Carrying out workshops and sessions to teach people about how to use the keto diet and benefits of the program.
- 3- Carrying out research in other regions of Iraq and conducting research concerning the problem



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# References



## References:

1- Zhu H, Bi D, Zhang Y, Kong C, Du J, Wu X, Wei Q, Qin H. Ketogenic diet for human diseases: the underlying mechanisms and potential for clinical implementations. *Signal Transduct Target Ther.* 2022 Jan 17;7(1):11. doi: 10.1038/s41392-021-00831-w. PMID: 35034957; PMCID: PMC8761750.

2- Xiao YL, Gong Y, Qi YJ, Shao ZM, Jiang YZ. Effects of dietary intervention on human diseases: molecular mechanisms and therapeutic potential. *Signal Transduct Target Ther.* 2024 Mar 11;9(1):59. doi: 10.1038/s41392-024-01771-x. PMID: 38462638; PMCID: PMC10925609.

3- Batch JT, Lamsal SP, Adkins M, Sultan S, Ramirez MN. Advantages and Disadvantages of the Ketogenic Diet: A Review Article. *Cureus.* 2020 Aug 10;12(8):e9639. doi: 10.7759/cureus.9639. PMID: 32923239; PMCID: PMC7480775.

4- Moore, J.; Westman, E.C. *Keto Clarity: Your Definitive Guide to the Benefits of a Low-Carb, High-Fat Diet*; Victory Belt Publishing Inc.: Las Vegas, NV, USA, 2020.

5- Berg, J. M., J. A. Tymoczko, and L. Stryer. "The Citric Acid Cycle." In *Biochemistry*. 6th ed. (New York, NY: W.H. Freeman and Company, 2007), 485.

6- Berg, J. M., J. A. Tymoczko, and L. Stryer. "The Citric Acid Cycle." In *Biochemistry*. 6th ed. (New York, NY: W.H. Freeman and Company, 2007), 492.

7- Raven, P. H., G. B. Johnson, K. A. Mason, J. B. Losos, and S. R. Singer. "How Cells Harvest Energy." In *Biology*. 10th AP ed. (New York, NY: McGraw-Hill, 2014), 132-133.

8- ^ Silva, Bryon; Mantha, Olivier L.; Schor, Johann; Pascual, Alberto; Plaçais, Pierre-Yves; Pavlowsky, Alice; Preat, Thomas (17 February 2022). "Glia fuel neurons with locally synthesized ketone bodies to sustain memory under starvation". *Nature Metabolism*. 4 (2): 213–224. doi:10.1038/s42255-022-00528-6. PMC 8885408. PMID 35177854.

9- Wheless JW. History of the ketogenic diet. *Epilepsia*. 2008 Nov;49 Suppl 8:3-5. doi: 10.1111/j.1528-1167.2008.01821.x. PMID: 19049574.

10- Nezar T .Hasan. ,Mohammed .T. Jwad ,Faisal H. Ghazi Mohammed A. Abdalqader . 2023.Knowledge and Perception Towards The Keto Diet Among The General Population in Baghdad City, Iraq.2023Majmaah Journal of Health Sciences 11(4):37-48  
DOI:10.5455/mjhs.2023.04.005

11-Sumayyah Mohammad Almarshedy et al, 2021.Ketogenic diet awareness, perception, and use in epileptic patients in Hail City, Saudi ArabiaInternational Journal of Medicine in Developing Countries.2021;5(5):1188–1194.https://doi.org/10.24911/IJMDC.51-1617009453

12-M. Altamimi et al.2021.Use, Knowledge and Perception About Ketogenic Diet Amongst University Students from Medical and Health .Sciences Faculties.Nutrition and Food Technology, Faculty of Agriculture and Veterinary Medicine, An-Najah National University, Nablus, Palestine. ISSN 2521-8492

13\_Shlabi, H., Alotaibi, A., Alqahtani, A., Alattas, H., & Alghamdi, Z. (2021). Ketogenic Diets: Side Effects, Attitude, and Quality of Life. *Cureus*, 13(12), e20390. <https://doi.org/10.7759/cureus.20390>

14-UC.devis .2022.KETOGENIC DIET MARKET OVERVIEW AND OPPORTUNITIES.Graduate school of management.

15-Alhassani, A. A., & Noorwali, E. A. (2024). Usage, knowledge and perception of the ketogenic diet and associated factors in Saudi adults: A cross-sectional study. *Medicine*, 103(6), e37063. <https://doi.org/10.1097/MD.00000000000037063>

16-<https://www.ilae.org/journals/epigraph/epigraph-vol-22-issue-5-fall-2020/food-for-thought-the-ketogenic-diet-as-epilepsy-treatment> .