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**Nutritional knowledge and Practice Among Physicians in Erbil City**

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((اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ \* خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ \* اقْرَأْ وَرَبُّكَ الْأَكْرَمُ \* الَّذِي عَلَّمَ بِالْقَلَمِ \* عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ ))

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**Dedication**

We'd like to dedicate our work to:

* Our family members especially our parents who always supported us.
* Our friends.
* Anyone who helped us out in doing our work and research.
* All Kurdish people who love knowledge and research.

With our love and respect

**ACKNOWLEDGEMENT**

We have completed our thesis on schedule and with little difficulty because of the blessings of ALLAH, the Most Gracious and Merciful. Without a doubt, the process of creating this thesis and conducting the study left us with such wonderful memories.

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We would like to thank the physicians who answered the research questionnaire as without their cooperation the completion of the research would be impossible.

**ABSTACT**

The present study entitled “Nutritional knowledge and Practice Among Physicians in Erbil City’ is a very new topic to be tackled in the region as there is no previous works done in this field in Kurdistan. Nutrition plays a vital role in our daily life and health improvement. Nutritional care positively contributed to the public health and improve the quality life of hospitalized patients and minimize malnutrition. This study aimed to determine the level of nutritional knowledge among physicians in KRI-Erbil, and to identify the level of nutritional and practice among physicians in KRI-Erbil, and to evaluate the adequacy of nutritional care provided by physicians in KRI-Erbil. This study uses a concurrent triangulation design to integrate the two main research approaches of qualitative and quantitative research. The primary data of the study is collected through questionnaire and the secondary data is collected through reviewing literature. Concerning the population of the study, the researchers distributed the questionnaire among 250 physicians in Erbil City to answer all the questions in the study. After collecting the data of the study, SPSS, version 27, program is used to analyze the data of the study in the most precise and reliable way using frequency, descriptive analysis, and ANOVA test.

The result of the study reveals that the importance of nutrition as a part of ongoing medical education should be emphasized. Being a crucial member of a multidisciplinary team providing medical care services, KRI needs to employ more dietitians in healthcare settings because dietitian knowledge is very significant when it comes to the patients since the focus on diet can help in the process of recovery. In conclusion, the research shows the significance of nutritional knowledge for the physicians who work in the healthcare since they can provide suitable diet for the patients based on their knowledge and the patient’s case.

The level of knowledge of participants according to professional qualifications by education type, P.G. Diploma/Master have three stages Low 15%(33.3), Moderate 25%(55.6) and High 5%(11.1). P.G Diploma/Master also have the stages of Low 13%(15.3), Moderate 70%(82.4) and High 2%(2.4). There is also three stages for PhD/Board which is Low 16%(15.1), Moderate is 84%(79.2), and High is 6%(5.7) Professional Qualification in Nutrition/ Dietetic have three stages that are Low 9%(64.3), Moderate 5%(35.7), and High 0%(0.0). The Chi-square test that have been applied yields P value of 0.423 that the value is bigger than the critical value of 0.05, which means have to reject the null hypothesis. The level of knowledge of participants according to work experience is significance however its P value is more than 0.05.

**KEY WORDS: physicians, *Nutrition, knowledge, practice, diet***

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**List of Abbreviations**

|  |  |
| --- | --- |
| **KRI** | Kurdistan Region – Iraq |
| **RDN** | Registered Dietitian Nutritionist |
| **MNT** | Medical Nutrition Therapy |
| **WHO** | World Health Organization |
| **SKD** | Standard Ketogenetic Diet |
| **DRI** | Dietary Reference Intake |
| **AI** | Adequate Intake |
| **EAR** | Estimated Average Requirement |
| **RDA** | Recommended Dietary Allowance |
| **UL** | Tolerable Upper Intake Level |
| **SPSS** | Statistical Package for the Social Sciences |
| **NKP** | Nutritional Knowledge and Practice |
| **MCQ** | Multiple Choice Question |
| **ANOVA** | Analysis of Variance |
| **NCD** | Non-communicable Disease |

**CHAPTER ONE**

# GENERAL INTRODUCTION

# CHAPTER ONE - INTRODUCTION

# 1.1 Introduction

This chapter introduces the content of the study being conducted. The research background is briefly discussed, followed by a discussion of the research statement. Then research problems and objectives are presented. After that, the significance of the study will shed light on the importance of the research.

Nutrition is an essential health-promoting element; it contributes to maintaining health in a good condition and protecting it against various diseases. It is also essential to the treatments that patients with chronic diseases receive. Due to its importance and long-lasting implications on the general well-being of humans, nutritional care often requires the prescription of health practitioners such as physicians, particularly in hospital settings, as they are knowledgeable about nutrition needs and are responsible to share information with the public (Alkhaldy, 2019).

Human beings need energy to optimize our capabilities and satisfy our needs in terms of our physical and mental states. We get that energy from the food we consume that contains nutrition. Once the nutrients are consumed and well digested in the stomach, they begin offering their biological contribution to human health by assisting metabolic activities, taking part in resisting diseases, and recovering from illness. Thusly, nutrition is significant for human growth and a constant state of well-being (Lean, 2019).

Furthermore, the body needs nutrition assistance with rebuilding its structure through bones, muscles, skin and etc. This only happens when the body has consumed a sufficient amount of water, healthy fats, protein, carbohydrate minerals, and vitamins, i. e. an adequate amount of nutrition. Occurring imbalances, deficiencies, nutrition abundance, or lacking nutrition is called malnutrition which can decline the health state (Sizer and Whitney, 2022).

The community learns about the importance of nutrition from healthcare professionals, particularly physicians are responsible for providing patients and the community with nutritional knowledge. Physicians have great private and public roles in monitoring and solving health issues, and these roles have received growing attention from both community leaders and health sector leaders (Gruen et al, 2004). Specifically, monitoring care plans, documentation, and treating a variety of medical conditions are among their responsibilities. Physicians are expected to give adequate nutritional-related advice in general to specific cases. Therefore, they need to have sufficient knowledge about nutrition as the knowledge totally shapes any nutritional-related practices (Alkhaldy, 2019). Furthermore, nutritional practice is as important as nutritional knowledge as the lack of it increases nutritional-related diseases and those usually degrade the general well-being of humans (Naser et al, 2021). The study conducted by Naser et al (2021) in the hospitals of the Gaza Strip in Palestine found that physicians have deficient knowledge of nutrition and nutritional education which has also influenced their medical work performances. The case could also be similar in the Kurdistan Region, however, due to a lack of research and literature in the field, this has remained somewhat unknown.

The healthcare system in the Kurdistan Region has developed in various areas; an apparent reason is having committed knowledgeable health professionals i.e. physicians who provide patients with the excellent health care possible. Though the system also faces various challenges, particularly the primary health care that has defects: the number of physicians in a hospital staff falls short per international standards; physicians are not adequately distributed among hospitals and, therefore, are usually overworked; there is a lack of quality measurement and, thus, physicians and other health staff members do not receive sufficient training and their improvements are not systematically measured (Neumann et al, 2012).

Medical studies in the Kurdistan Region are embedded in the Iraqi education system. Physicians in the Iraqi medical education system are provided with specialized courses and training during the 6 years of their studies. However, physicians, their issues, and their contributions to the health sector have not been majorly studied (Squires, 2010). This is a defect in the medical literature in the Kurdistan Region and it needs further attention. Researching this subject not only fills the gap in literature but will also contribute to potential issues regarding both nutritional knowledge and practices and physicians’ roles in the health sector.

# 1.2 Justification

The health system and health professionals in the Kurdistan Region have not been studied to my best knowledge and not many studies have been conducted regarding them as stated by Karadaghi et al (2015), so the role of the physicians in the health systems is yet to be further studied. Consequently, nutritional knowledge and practices among physicians in Kurdistan Region remain undiscussed and need to receive attention from researchers. Therefore, this study is conducted to examine physicians' knowledge regarding nutrition and to which extent they practice their nutritional knowledge in the Kurdistan Region.

# 1.3 Research Hypothesis

The research attempts to provide answers to the following questions:

1. What is the level of nutritional knowledge among physicians in Erbil- KRI?
2. To what extent do physicians in Erbil- KRI practice nutritional knowledge?
3. How adequate is the provision of nutritional care by physicians in Erbil- KRI?

# 1.4 Research objectives

The significance of this study lies in three major points. As discussed above, there are no adequate studies regarding nutritional knowledge and physicians' roles. Hence, this research is an attempt to evaluate nutritional knowledge and practices among physicians in the region as a subject not being researched previously. Thus, the research outcome will help health professionals to find out more about their competency in the specified area through which they may know what is missing and work on better improving themselves.

It will also be beneficial for medical education specialists as they will gain more insights towards the quality and quantity of providing nutritional education. Lastly, this study will be a contribution to the medical literature in the region that not only health professionals but students and future researchers can take benefit from.

The research aims at achieving the followings:

1. To determine the level of nutritional knowledge among physicians in Erbil- KRI.
2. To identify the level of nutritional practice among physicians in Erbil- KRI.
3. To evaluate the adequacy of nutritional care provided by physicians in Erbil- KRI.

**CHAPTER TWO**

# LITERATURE REVIEW

# CHAPTER TWO - LITERATURE REVIEW

# 2.1 Health Care Team

This is referred to every nurse, therapist, doctor, assistant, and any other health care specialist working in the field of health. They work together as a team to provide health services to their patients and achieve certain institutional goals. Each of them has its own role either big or small which are all important for saving lives and helping patients get better treatments and care. Patients who are staying in a hospital for various reasons, interact with these teams every day and see the way they do their jobs. It is stated that the number of people working in the field of health care is more than 7 million. The health care team changes based on hospitals and the condition of the patients but overall they all have the same goal which is to serve the patients and take care of them however needed. The following professions are some of the ones included in the healthcare team which are:

1. Doctors or physicians who are responsible for taking the medical history of the patient alongside reviewing the results of various tests and setting a treatment plan.
2. Nurses who are taking care of the patient 24 hours a day and always provide the patient with answers where there are any questions or needs. They may also give the drug to the patients and are cautious of any change in the patient’s health.
3. Therapists are having a different roles with the patient based on their profession. Physical therapists may help the patient with daily-life activities such as walking and changing sides in the bed. There are also other therapists who are specialized in speech and difficulties related to speaking and communicating with others.
4. Social workers are an important part of the team that is responsible for supporting and preparing the patients alongside giving them information and home health care needs. So their service is not only in the hospital but also in the homes of the patients (Pistoria, 2022).

# 2.1.1 Physicians’ Roles in Health Care

In the process of taking care of a patient, a physician has the role of a leader who is supervising the health of the patient. Based on their role, the physicians are examining the physical health of the patients to diagnose if there is any issue. They are also responsible for managing the plans related to treating the patient. The physician’s role is necessary and they should have a great relationship with their patients that is developed through having trust based on the care of the doctor (Dutta, 2020).

The role of a physician is considered the most important among all the other members of the health care team. Choosing a certain type of therapist, drugs, and surgery are among the necessary assignments of physicians. Each patient has a limited time in a hospital and the time of their leave is decided by a doctor. Most of the time, the important decisions that are directly linked to the health and treatment of the patient, are made by a physician. Because of their importance in the field, the number of physicians is increasing day by day. Based on a survey, there are nearly 400 million interactions between a physician and a patient annually in a hospital. That is why there is a strong connection between the doctors and the patients which are stronger than the other connections in the field of health care (William et al., 1983).

In a hospital, physicians have access to all the sources and types of information to do their jobs in the best interest of patients and help them make the right decision about ways of treatments for their health. Usually, they have little or no connection with the administration of the hospital. They aim to provide patients with high-quality service with practices supported by evidence and local norms. In an environment where physicians take the role of the leader, patients are provided with a higher-value service and the process of physical and mental treatment would be different (Kuntz and Scholtes, 2008).

# 2.1.2 Role of Physicians in Nutrition-Related Diseases

Physicians have great roles in monitoring and solving health issues, and these roles have received growing attention from both community leaders and health sector leaders (Gruen et al., 2004). Specifically, monitoring care plans, documentation, and treating a variety of medical conditions are among their responsibilities. Physicians are expected to give adequate nutritional-related advice in general to specific cases. Therefore, they need to have sufficient knowledge about nutrition as the knowledge shapes any nutritional-related practices (Alkhaldy, 2019).

A study conducted by Naser et al in the hospitals of the Gaza Strip in Palestine (2021) found that physicians have deficient knowledge of nutrition and nutritional education which has also influenced their medical work performances. Similarly, studies concerning physicians and nutritional knowledge in countries like Bangladesh, Taiwan, Qatar, and New Zealand have also shown that most physicians do not assess their nutritional knowledge at a high rate which suggests a deficiency in nutritional knowledge. Nutritional practice is as important as nutritional knowledge as the lack of it increases nutritional-related diseases and those usually degrade the general well-being of humans (Naser et al., 2021).

There is a little or insufficient literature review of the health system and health professionals in the Kurdistan region as stated by Karadaghi et al. (2015), so the role of physicians in the health systems is yet to be further studied. Similarly, a study conducted on smoking among health professionals in the region also points out the inadequacy of research on the health system and health practitioners of the region (Abdulateef, 2016). Consequently, nutritional knowledge and practices among physicians in Kurdistan Region remain undiscussed and need to receive attention from researchers.

# 2.1.3 Registered Nutritionists and Dietitians

Nutrition is an essential health-promoting element; it contributes to maintaining health in a good condition and protecting it against various diseases. It is also essential to the treatments that patients with chronic diseases receive. Due to its importance and long-lasting implications on the well-being of humans, nutritional care often requires the prescription of health practitioners particularly in hospital settings, as they are knowledgeable about nutrition needs (Alkhaldy, 2019).

These qualified health professionals are responsible for all the problems related to food, diets, and nutrition and they help people have a healthy lifestyle by choosing foods suitable for them based on research that is recent and approved. More than 925 million people in the world are suffering from undernutrition chronic which happens because of a lack of food compared to the energy one needed to perform actions. Certain foods are recommended by registered nutritionists and dietitians to help people with diabetes, eating disorders, and other health conditions related to food and eating habits. So, their way of serving patients is called medical nutrition therapy. The works of registered nutritionists and dietitians are usually part of a health care team. But besides that, they can work in other fields such as sports, education, and the food industry and the law regulates their work in different areas (Willner, 2022).

Many people in the world are facing the danger of early death due to their unhealthy eating habits and poor diets. That is why one of the mains social issues is related to diet and nutrition. Registered dietitian nutritionists (RDN) are focusing on preventing and managing diseases, and promoting health, and generally, they are responsible for the well-being of the people needing help. They depend on evidence-based research to aid people which is contrary to the way people are getting information nowadays from the internet which usually lacks important details and might be misleading (Christaldi et al., 2015).

# 2.1.4 Role of Nutritionists and Dietitians in Health Care Team

Patients with certain diseases related to food or eating habits usually seek help from nutritionists and dietitians. The patient might also want to achieve a specific weight goal and that can also be achieved under the recommendations of registered nutritionists and dietitians. They are part of the healthcare team and work with doctors and nurses in healthcare facilities like hospitals. They aim to prevent diseases from being worse by raising awareness about food and its consequences. Those teams that have a dietitian, have been known to provide more effective service and consultation to patients with several health issues like diabetes, heart disease, and high blood pressure compared to those teams that don’t have a dietitian. There are various types of dietitians such as (clinical dietitians, nutritional counseling, community dietitians, management dietitians, etc.) They are advising patients to have good nutrition in order to lead healthy and long life. Generally, their roles are as below:

1. In a hospital, they identify problems related to nutrition and the patient’s nutritional status can be evaluated with the help of dietitians.
2. They supervise the nutrition programs in health centers and make sure the meals of patients are proper based on their illness.
3. Providing patients with a healthy and suitable diet plan, especially for those who have a certain weight goal to achieve under the consultation of the dietitians.
4. They always try to prevent nutrition-related diseases. That is why they are not only advising about what to eat to stay healthy but also what to avoid in the process of starting a healthy life and getting a specific weight.
5. They track the way patients in health care centers are progressing toward their nutrition program and plan set by registered dietitians or nutritionists (Idris and Jannakl, 2013).

# 2.2 Nutritional Knowledge

One of the foundational aspects of life is nutrition, which is the assimilation of food into the systems of living things that support daily life. As the name implies, "nutrition" refers to a group of substances that includes carbs, proteins, lipids, vitamins, minerals, roughage, and water. A healthy diet has essential nutrients in the proper amounts and balance (Schwartz, 1975).

The definition of "optimal nutrition" is defined as consuming the recommended amounts of nutrients on the recommended schedule to maximize performance and live as long as feasible in excellent health. The prevalence of nutrient deficiency diseases including night blindness, scurvy, cretinism, and anemia as well as nutrient excess health-threatening conditions like obesity, metabolic syndrome, and other cardiovascular anomalies demonstrate the necessity of nutrition. Malnutrition brought on by a shortage of even the most essential nutrients has been a hallmark of undernutrition in developing and undeveloped nations, leading to illnesses like marasmus and kwashiorkor. Nitrogen, carbon, and hydrogen molecules are the building blocks of animal nutrition at the molecular level. The building blocks of the food chain are nutrients, which connect to create food webs and have an impact on global food production through biodiversity. The chemicals required for plant development and other physiological activities in plants, such as metabolism, transport, photosynthesis, etc., are referred to as plant nutrition. Since nutrients are derived from the soil, air, sunlight, and the entire planet, they may be regenerated and refreshed and are therefore readily available for the support of life (Gracey et al., 1996).

Both students and those from the working class frequently exhibit signs of fatigue, exhaustion, and apathy. To feel rejuvenated, motivated as well as reenergized, all we require is the correct diet and ingredients for our systems. Optimal health is achieved through nutrition, which also helps people feel better about themselves and perform their activities better.

# 2.2.1 Sources of Nutritional Information

A balanced diet lowers the likelihood of developing the main causes of death and enhances overall health and well-being. The importance of nutrition has grown as a result of much study and research throughout the years. Numerous educational levels include nutrition education, and the foundational roles of our society's farmers, scientists, nutritionists, dietitians, and doctors are all based on knowledge of nutrition principles. Even while an ongoing study on "nutrition" throughout the globe has improved living conditions, a significant portion of society is still not provided with an adequate food supply as well as relevant information on the subject. (Mowe et al., 2008).

Maintaining a healthy nutritional state and making healthy choices are all based on having information about nutrition and proper diets. It includes being aware of the link between foods and diseases, general well-being, and recent research on nutrition and diets. Optimal nutritional behaviors can be directly affected by the knowledge and the control one has on their food choices and the amounts of nutrition one get per day. Online sources alongside the media are sharing information regularly which influences the behavior of individuals in choosing various foods. These data are not available to everyone because people in developing countries can’t access all the data and their abilities are limited although they are needed for developing good nutritional habits that lead to good health. People usually get their information from various sources such as books, family members, television, and online sources. According to a study conducted in Accra Metropolis of Ghana, (92.7%) of the participants are focusing on the internet to get nutritional information. But this source alone is not relevant and there might be information that is not evidence and research-based. This is while most of the participants stated that they believe that registered dietitians are the most reliable sources for getting nutrition information and healthy diets that lead to a healthy lifestyle (Quaidoo et al., 2018).

# 2.2.2 Curriculum of Medical Departments

Medical science in the world is going through rapid development and there is always an increase in students’ demand to attend the medical departments. They want to gain skills and improve in the field which can be achieved through coping with this rapid change that leads to providing better service and addressing health issues more properly in different societies. The curriculum of the medical departments that are 5 to 6 years based on the department, and aims to prepare students to be skilled in the field and help people achieve optimal health goals. It is a continuous process that inspires students to work hard and follow the practices well as they have an influence on people’s lives in the future (AbdulRaheem and EmadEldee, 2021).

The medical schools have their own goals and missions that aid in improving the quality of the studies and practices they perform during the years they study in such departments. The medical education program has board and faculty members who made all the important decisions for establishing an effective program for students trying to learn and be skilled in specific fields. The medical department is not only theoretical but also practical and linked to the various clinics. Students are going through various training in a health care setting and commit the necessary time to achieve certain goals related to the health and treatments of patients. This training would be with physicians and other staff members of a health care team in which the student would get an experience of real-life working with patients and other medical staff. A proper, professional, and safe environment should be established for students in order for them to become the professional physicians required by clinics in the future and after graduation. The medical curriculum is delivered through sufficient time and required qualifications in order to fulfill the needs of students in the academic years. This is besides providing necessary equipment and educational resources that are needed by students to achieve certain knowledge and improve their skills (LCME, 2014).

# 2.3 Importance of Diet in Medical Therapy

Healthy diets can have a great influence on the life of humans and help in preventing various diseases. Through changes in the lives of people and globalization, eating and dietary habits have also changed. In almost all the medical departments, there is a hospital diet used as a modern therapy that contains the normal diet mixed with artificial nutrition. Through diet therapy, patients are having a balanced selection of various foods rich in vitamins and useful ingredients for better health. Patients with harmful eating habits and obesity are getting instructions and recommendations from field professionals that help them understand the way food works on their health, know the illnesses better, and how healthy diets help in reducing the side effects of these illnesses. Medical Nutrition Therapy (MNT) is known as an approach that is based on evidence and is used through a nutrition personalized plan set by a registered dietitian nutritionist to treat chronic conditions such as heart attack, cancer, obesity, Gastrointestinal disorders, and renal disease. This process is done by examining the current eating habit of the patient, evaluating the nutrition status, and establishing a realistic treatment plan (Loconti, 2021).

Diet therapy generally includes controlling the intake of nutrition in a meal that has a great effect on the well-being of the individuals. Based on the health of the patient, this diet can be both temporary and permanent which changes from one person to another but overall energy is provided for the body. Low in sugar, salt, and fats is the definition of a healthy diet aside from the energy one gets from various food ingredients such as proteins and carbohydrates. The benefits of diet therapy come from consulting a dietitian in a hospital, including the increase in energy for daily activities, preventing of diseases, and losing weight. Diet therapy is known as a support for the medical condition one has as it changes the lifestyle and behavior of the patient as it has been marked effective to a better health condition (June and Mchiza, 2022).

# 2.3.1 Diet and Health Implication

Studies have stated that diets have a great influence on health and can prevent various chronic diseases and is a useful treatment for such diseases. Especially those that include eating more fruit, vegetables, and plant-based foods. At least 9 servings of fruit and vegetable each day are recommended to stay on track with being healthy. Such diets explain the role of food in the general well-being of an individual and how essential nutrients can positively change one’s health for the better. World Health Organization (WHO) recommends that there should be dietary changes for those living an unhealthy lifestyle that includes tobacco and alcohol use. Instead, people should follow a healthy diet of balanced energy and reduce sugar, salt, and fat. These limitations are also part of the approach of evidence-based diets that is followed to prevent harmful diseases. A balanced diet contains the correct proportion of various food that works like a reserve for the days the person doesn’t intake a sufficient amount of food (Cena and Calder, 2020).

It is proven that diet has a good effect on health and can prevent various diseases. However, as it has advantages, there are also disadvantages of diet especially when it includes energy intake in an amount less than the one needed and recommended for the individual. It usually happens when one wants to lose certain weight. The decrease in nutrition can lead to malnutrition which will be the reason for mental, renal, respiratory, and muscle disorders and they are no longer functioning effectively. These people will also suffer from mental health issues such as anxiety and depression which usually happens due to the lack of vitamins, magnesium, and calcium. This is besides the continuous side effects of headache, feeling fatigued, and losing muscle mass. Generally, the individual will have less energy to perform the daily activities they used to do. So, food has a great effect on everyday life and it is essential to follow a healthy diet recommended by a dietitian if one wants to prevent diseases and disorders (Popova and Popov, 2017).

# 2.3.2 Types of Diets

Diets and losing weight have been one of the most prominent subjects in the world of health and beauty nowadays. People with obesity are facing many health issues such as heart attack, high blood pressure, and diabetes and that is why they are considering various diets. According to a survey, in America and among adults, 50% of them are considered overweight. Diet, in general, is choosing a healthy lifestyle in which one follows some rules and set some boundaries for himself for a long period to avoid several diseases and to achieve optimal health status. There are many various types of diets common among people. Some of them work well and others don’t and it is based on the body, mind, and life of the person. The limitations include controlling themselves from taking fats and calories while in some types it includes reducing the person’s appetite. Due to a lack of knowledge and not consulting expertise, some people are facing further issues as there is an imbalance in their nutrition intake. Almost all diets can help in losing weight and getting rid of obesity but the focus should be on maintaining the weight not just losing it which can be critical in the crises of obesity. Diets can generally be categorized into three different types that are high-fat diet (55% to 65%) with low carbohydrates, Moderate-fat (20% to 30%) in which nutrients are reduced with balance, and Low-fat (11% to 19%) that is high in carbohydrates. Some diets can cause a great loss in body water than body fat and it can be short-term because eventually, the water weight will be back but the losing body fat can be for a longer period. For those people who are focusing on maintaining weight, following a diet that is low fat and low calorie is helping them achieve such a goal. Regarding the duration of a diet, overall, there is no certain period but rather a lifetime choice, and habits in everyday life are the key to the diet’s success. The most famous types of diets followed by people are the ketogenic diet, the Mediterranean diet, the vegan diet, the raw food diet, the paleo diet, the low-carb diet, etc (Freedman et al., 2001) .

# 2.3.2.1 Ketogenic Diet

This is one of the most famous types of diet which is very high in fat, low in carbohydrates, and a moderate amount of protein. The ketogenic diet used to be a treatment for epilepsy seizures as it was used to maintain ketosis. The term means producing ketone as Keto means ketone and Genic means producing. So, this type of diet produces ketone which is a chemical produced by the liver. In the ketogenic diet, the body doesn’t use carbohydrates as a source of energy as usual because the diet is very low in carbohydrates. Instead, fat is used as a source of energy. This diet can cause diarrhea, vomiting, and nausea but if it is followed gradually, these consequences would be lessened. People need to follow the plan of this diet under the supervision of experts as it can have side effects that lead the patient to be hospitalized because the plan changes from one person to another. Weighting the food on a scale to know their gram is one of the basic rules of the diet alongside drinking beverages that are both caffeine and calorie-free. Medium-chain triglycerides MCT is the oil that is used in the ketogenic diet because it is easier to digest and it makes the diet tastier. Generally, those people following such a diet might need to take supplements for iron, vitamin D, zinc, calcium, and other nutrition as the diet is insufficient in them, and in the beginning, the individual may face fatigue and feel tired most of the time (Hart, 2018).

The Ketogenic diet has some types that are Standard Ketogenic diet (SKD) which is the popular type and has 70-75% fat compared to low carbohydrates and moderate protein. There is also a High protein Ketogenic diet which is high in protein but still 60% fat and again low in carbohydrates. The third type is the Cyclic Ketogenic diet which has some days of carbohydrates as part of the cycle. The last type is the Targeted Ketogenic diet which focuses on workouts and includes a higher amount of carbohydrates as a way of preventing muscle loss and increasing stamina. In this diet, some foods and vegetables are allowed such as broccoli, onion, eggplant, mushrooms, tomato, pork, chicken, egg, yogurt, watermelon, strawberry, peanut, almond, walnut, and all the sea foods. Also, there are some foods and snacks to avoid such as fruits that are rich in carbohydrates, candy, juice, cakes, chocolates, honey, rice, potatoes, pasta, sausage, pepperoni, beer, and French fries. This diet, although proven to be useful for many people, has some side effects. Due to the diet, the body removes the ketones through urination which becomes frequent and it leads to dehydration to the individual. Headache, insomnia, fatigue, irritability, and dizziness are among the major side effects of the ketogenic diet. There might also be issues related to concentration and brain fog due to loss of electrolytes that happen because of the increase in urination. These side effects can be overcome and are short terms but there are still long-term side effects such as deficiency in nutrition or other health issues such as kidney stones in which are yet to be proven. It is advised that such a diet should not be followed by people with type 1 diabetes, people having high cholesterols, and lactating mothers (Goswami and Meghwal, 2021).

# 2.3.2.2 The Mediterranean Diet

This is another popular type of diet named after the people who were living in the areas close to the Mediterranean Sea which were poor, and inhabited in rural areas, particularly in Spain, Italy, and Greece. Throughout history, such countries were known to be the healthiest compared to all the other countries. The diet started in the 1960s and the traditional style of this diet was about eating a great number of vegetables and fruits mostly alongside wine because they couldn’t afford meat and dairy products at that time. The focus of this diet is to avoid foods that are canned and instead it is important to take foods in their natural, healthy form. Based on this diet, one can eat three servings of vegetables alongside three other servings of fruits. Also, they can eat whole grain bread, fish, eggs, beans, fresh herbs, virgin olive oil, nuts, garlic, and onion. There is also red meat, chicken, yogurt, and milk in this diet but it should be a very small amount in the week. The diet includes many different foods and it has made it delicious and favored by those people who have tried it and is not limited to one person but a family together can follow the rules of this diet under the supervision of a dietitian. What differentiates this diet from the other ones is the use of olive oil, fatty fish, and oils of nuts as the major source of oil. And also the habit of drinking a very small amount of wine and only with meals. According to the studies, this one also helps with losing weight and also beneficial for lowering blood sugar levels, and helps in reducing mental issues such as anxiety. That means it is a health-promoting diet as it is also useful for reducing blood cholesterol, reducing the symptoms of dementia, heart disease, stroke, cancer (breast cancer in particular), and reducing type 2 diabetes. Based on a study, those people who have followed the Mediterranean diet have experienced a decrease in cardiovascular events by 30%. This diet, although, proven to be healthy and effective but is not perfect and has its shortcomings. One is the selection of foods that is specific to the people of such areas and everything might not be available in other countries. Also, the use of wine as part of this diet is not healthy for everyone and should be avoided in most cases. This is besides the changes in the traditional components of the diet over time, nowadays people who are following this diet, have modernized it and are eating more meat and fewer vegetables than the suggested amount. These points need further studies and are not fully supported by evidence yet (Trichopoulou et al., 2014).

This diet is mostly about taking a variety of foods but in small amounts and is different from the other popular diets as they usually limit the individual to certain foods and avoid others. The Mediterranean diet which is not costly like most of the others also encourages people to share foods, eat with family members and friends, and have a healthy and active lifestyle. Everyone regardless of their age can follow and get benefit from this diet and it is recommended in this diet to do at least 30 minutes of exercise each day and get enough rest (Haas, 2014).

# 2.4 Dietary Reference Intake and Recommendation

Dietary Reference Intakes (DRIs) is a term that is generally used in the field of health and nutrition. It refers to some standards that are a nutrient reference and are used as a tool for planning diets and some other purposes. Canada and America have joined together depending on gender group and life stage to develop what was the popular standards that were no longer practical and useful which were the Recommended Nutrient Intakes for Canadians and Recommended Dietary Allowances for Americans. It started with the publication of a group of reports about related nutrition not just one report for all of them. This approach helps in providing athletes and non-athletes with appropriate planning for diets and healthy intakes that are balanced and adequate through the use of new statistical techniques. The Adequate Intake (AI), Estimated Average Requirement (EAR), Recommended Dietary Allowance (RDA), and Tolerable Upper Intake Level (UL) are what are included in these DRIs. It updates the previous data on the reliability of the standards used before. The quantity of the food consumed in the diets is focused on and if it is very different in the types of nutrition, there need to be adjustments. It avoids any condition that happens due to nutrition intake regardless of the malnutrition cases. For those who are dealing with diseases and are not getting benefits from such reference value, recommendations about nutrition should be made for them by qualified dietitians and nutritionists. In the case of decreasing the risks of various diseases, based on research and if appropriate, such recommendations would be given considering the period in which the disease would be detected. For example, those who are suffering from inadequate dietary intake should follow taking more consumption and be advised to change their eating behaviors and use supplements when necessary. These reference value standards can be used in educational programs, evaluations of recent studies, and in creating food guidance for healthy people (Barr, 2006).

# 2.4.1 Definitions of the Four Dietary Reference Intake

The four categories of values of the Dietary Reference Intake approach are explained below:

1. **The Estimated Average Requirement (EAR)** is a value that focuses on the intakes that fill the needs and requirements of individuals in the world. The lowest amount of intake sufficient for one person is what is defined as a requirement in this value which may differ among the age groups. It is based on the requirements of 50% of the individuals that are healthy in a group and below that is the other 50%. This can be also used as a plan and assessment to measure the intake of a group.
2. **Recommended Dietary Allowance (RDA)** is the value that focuses on the amount of nutrition that is marked as the sufficient daily intake for an average of nearly 98% of a group’s healthy individuals. Most people use this value as a goal for their diet and intake in a day.
3. **Tolerable Upper Intake Level (UL)** is the one focusing on the highest amount of nutrition one can take in a day without imposing any danger and harm to the life of the individual. But by taking more than this amount, the individual is going to take risks and there might be harmful consequences. This level of intake is not recommended by experts to be used but it is rather set as a limit not to trespass.
4. **Adequate Intake (AI)** is the value used in the process of calculating the EAR when there is an absence of enough scientific evidence. In this value, there is an approximate amount of daily nutrition intake that is recommended for a group who are healthy people and have a sufficient intake of nutrition. This can also be used as a goal when there is an absence of RDA and is expected to measure what is known as the sufficient intake of an individual in a day (Barr, 2006).

**CHAPTER THREE**

# MATERIALS AND METHODS

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# CHAPTER THREE –MATERIALS AND METHODS

# 3.1 Study Design

The study design is a significant aspect of any study that is carried out. It is a depiction of the research's overall framework. It can also be characterized as a framework that takes into account research subjects and data collection techniques, as well as the researcher's meticulous planning for addressing the research questions. The method used to conduct the study is one of the most important decisions made during the research design phase (Sileyew, 2019). This study uses a concurrent triangulation design to integrate the two main research approaches of qualitative and quantitative research. Using questionnaire, two types of surveys have been created: standardized close-ended questions and open-ended questions. Also, the study adopts a cross-sectional strategy which means that the process of collecting data takes place all at once.

# 3.2 Study Population

The population in research is defined as those who are engaged with the subject studied that the researcher wants to gain data and information from. The population can be huge or narrow in number. Also, sampling is the process of choosing participants among the population as it is difficult for the researcher to obtain data from each individual in the population. And by studying and analyzing the samples, the researcher can imply the results to the entire population (Allen, 2018).

 The targeted population of this mixed-methods study is the doctors located in Erbil city. The Questionnaire is distributed to the doctors and 250 samples are selected among the population. This research applies the probability sampling procedure in which there is a probability of participant selection as samples. And the type of probability sampling is simple random sampling (Bhardwaj, 2019).  This type of sampling offers several advantages to the researcher that is why we chose it for our study. It is an easy method of sampling and does not create differentiation between those that are been studied. For example, it does not classify samples by their experiences or skills. There is also no chance for conscious or unconscious bias in selecting individuals as samples, so individuals have equal chances of being selected. Last but not least, simple random sampling is a procedure in which chances of occurring mistakes in the data collection is unlikely (18 Simple Random Sampling Advantages and Disadvantages, 2019).

# 3.3 The Method of Data Collection

The technique for acquiring data from the study's population is known as data collection. This study uses a mixed-method approach to data collection, using both quantitative and qualitative data. The primary information is gathered using questionnaire. To collect information from participants about the study's subject, a quantitative questionnaire with closed-ended questions and a qualitative questionnaire with open-ended questions were developed. The survey will be distributed to the participants after the University approves them, as it will be analyzed with the use SPSS program which is a reliable data analysis tool. The data will be presenting in the form of charts and tables with the explanation of each figure separately.

# 3.4 Questionnaire

Many questions from this study were adapted from literature review, however some questions are added as new questions, as it is been added in the (Appendix). The data of the study is collected through the use of questionnaire in the form of survey. The survey is in one language which is English.

A script of a questionnaire will be developed that contains 45 open-ended questions, which is part of the qualitative method. The questionnaire is of four sections each includes certain questions related to the title of the section. The first section is about the demographic information of the respondent such as; gender, age, educational background. The second section of the survey is knowledge that asks questions about the nutritional knowledge. The third section is about Physician Attitudes and Practice Questions. The fourth section is about Question regarding diet-related diseases and therapy.The respondents will provide answers to all the questions based on their experiences. The form of the questionnaire is not a specific approach rather each question has certain multiple choices to choose.

# 3.5 Pilot Study

The purpose of a pilot study, often known as a "feasibility study," is to assess the possibility for a future, full-scale project before doing any large-scale quantitative research. A crucial element of the research process is the pilot study. Before the primary research is undertaken, they can assist in identifying design difficulties and assessing the feasibility, practicability, resources, time, and cost of a project.

In this study, we prepared the survey form that contained only 20 questions. The questionnaire was piloted among 10 physicians to ensure clarity of the questions; the pilot sample results were not included in the main results of the study. After receiving the responses, we decided to include some other related and necessary questions to enrich the content of the survey and to get more detailed information. Then we updated the survey and prepared the last version to collect the data of the study.

# 3.6 Ethical Consideration

A set of rules that direct your study designs and procedures are known as ethical considerations in research. When gathering data from people, scientists and researchers must always abide by a set of ethical principles. Moreover, understanding real-world occurrences, researching efficient therapies, examining habits, and enhancing lives in other ways are frequently the objectives of human research. These considerations work to protect the rights of research participants, enhance research validity, and maintain scientific or academic integrity.

Ethical approval was obtained from the ethical committee of Cihan University – Erbil after the researchers prepared the survey and got the supervisor’s approval.

# 3.7 Statistical Data Analysis

Data analysis denotes to the progression of analyzing the data gathered from the population, in a systematic way, by organizing the information, evaluating and understanding it. This process is a crucial step in conducting any research as the researcher will be able to display the finding of the study only by analyzing the data. In this study, after the participants give their own responses, all the data will be automatically recorded in a spreadsheet that allows the data to be analyzed through SPSS -version 27 program.

**CHAPTER FOUR**

# RESULTS AND DISCUSSION

# CHAPTER FOUR – RESULTS AND DISCUSSION

# 4.1 Introduction

This chapter discusses the findings of the current study entitled " Nutritional knowledge and Practice Among Physicians in Erbil City" which used the Statistical Package for the Social Sciences (SPSS) to analyze the data. The study's data is based on the responses of the doctors to a questionnaire that was created with the study's goals in mind. Together with the variables, the researchers used descriptive analysis to analyze all the questionnaire sections. Based on the study's first chapter's stated objectives and the questionnaire sections, the analysis presented in this chapter was conducted and the discussion is made.

# 4.2 Demographic Analysis and Discussion

The demographic analysis is one of the most crucial portions of the data analysis chapter. The responders' age, gender, workplace/occupation, working experience in practice, professional qualification, country of obtaining your highest degree, current professional status, working in academia/university, current specialization, and attending any nutritional training course are just a few of the variables that can give the researcher a variety of outcomes (Table 4.1). The researcher used a frequency table to analyze the data in this section, concentrating on the findings.

Table 4.1:Demographic Frequency N(%250)

|  |  |  |
| --- | --- | --- |
| **Items** | **Frequency** | **Percentage (%)** |
| **A) Age**  30\_39  40-49  50 and more | 62  98  90  **Total :250** | 24.8  39.2  36.0  **Total :100** |
| **B) Gender group:**  Male  Female | 158  92  **Total :250** | 63.2  36.8  **Total: 100** |
| **C)Workplace/Occupation:**  Gov. Hospital  Primary Healthcare Centers  Private Hospital  Private Clinic/ Centers  All | 67  55  53  38  36  **Toatal:250** | 26.8  22.0  21.2  15.2  14.4  **Total:100** |
| **D) W Exp in practice /No. of Y after college or graduation.**  1-9 Years  10-19 Years  20-29 Years  30 Years and Over | 158  23  49  17  **Total:250** | 63.2  9.2  19.6  6.8  **Total:100** |
| **E) Professional Qualification:**  MBBCh  P.G. Diploma/ Master  PhD/Board  Professional qualification in Nutrition/ Dietetics | 46  84  106  14  **Total :250** | 18.4  33.6  42.4  5.6  **Total:100** |
| **F) Country of obtaining your Highest Degree:**  Inside Kurdistan and Iraq  Outside Kurdistan and Iraq | 168  82  **Total:250** | 67.2  32.8  **Total:100** |
| **G) What is your current professional status?**  G.P. General practitioners (GPs)  Medical Internal  Resident  Specialist/ Registered  Consultant  Senior Register  Other | 49  79  35  43  26  10  8  **Total :250** | 19.6  31.6  14  17.2  10.4  4.0  3.2  **Total:100** |
| **H) Are you working in academia/ university?**  Yes  No | 108  142  **Total :250** | 43.2  56.6  **Total:100** |
| **I)What is your current specialization?**  Intensive care  Endocrinology  Pediatric  Family Medicine  Orthopedic  Surgery  Obstetrics and Gynecology  Otolaryngology  Other | 32  45  31  33  16  38  13  8  33  **Total :250** | 12.8  18.0  12.4  13.2  6.4  15.2  5.2  3.2  13.2  **Total:100** |
| **J) Have you attended any nutritional training course?**  Yes  No | 159  92  **Total :250** | 63.6  36.4  **Total:100** |

According to Table 4.1, the responders’ ages are as follows; about 25% were between 30-39, 39% were between 40-49, and 36% were 50 years and more. Moving to the responders’ genders, 63% were males and 37% were females. The workplace occupations of the responders are as follows; 27% were working in the government hospitals, 22% were working in the primary healthcare centers, 21% were working in the private hospitals, 15% were working in the private clinics or centers, 14.5% were working in all of them. Focusing on the years of experience in practice after graduation the data are as follows; 63.2% had 1-9 years of working experience, 9.2% had 10-19 years of working experience, 19.6% had 20-29 years of experience, and 6.8% had more than 30 years of experience. Further, the responders’ qualification are; 18.4% hold MBBCh, 33.6% hold P.G. Diploma/Master, 42.4% hold PhD/ Board, and 5.6% hold qualification in nutrition and dietetics. Alongside, 67.2% got their degrees inside Kurdistan region while the other 32.8% got their degrees outside Kurdistan region. Focusing on the responders’ professional status; 19.6% of the responders were general practitioners, 31.6% were medical intern, 14% were resident, 17.2% were specialist/ registered, 10.4% were consultant, 4% were senior registered, and 3.2% chose other. It is also been asked if the responders are working in academia or not, the results are as follows; 43.2% of the responders were working in academia and the other 56.6% were not. Concerning the responders’ current specialization, the data are; 12.8% were intensive care, 18% were endocrinology, 12.4% were pediatric, 13.2% were family medicine, 6.4% were orthopedic, 15.2% were surgery, 5.2% were obstetrics and gynecology, 3.2% were otolaryngology, and 13.2% chose other. And the last question is about the attendance of the responders in nutritional training, 63.6% of the responders attended and 36.4% of the responders did not attend any nutritional training.

# 4.3 Descriptive Statistics and Discussion

Descriptive statistics are one of the most important components of data analysis. To summarize and validate the findings of this study, descriptive statistics are used to explain and illustrate the data that were collected. The study goals are achieved with the aid of percentage analysis. Detailed analysis will be presented for each section in the below tables.

Table 4.2: Descriptive Analysis for Nutritional Knowledge and Practice N(%250)

|  |  |  |
| --- | --- | --- |
| **NKP Section 1** | **Yes**  ***f***  **(%)** | **No**  ***f***  **(%)** |
| **NKP 1S1** | 166 (%66.4) | 84 (%33.6) |
| **NKP2 S1** | 193 (%77.2) | 57 (%22.8) |
| **NKP3 S1** | 190 (%76) | 60 (%24) |
| **NKP4 S1** | 191 (%76.4) | 59 (%23.6) |
| **NKP5 S1** | 206 (% 82.4) | 44 (%17.6) |
| **NKP6 S1** | 211 (%84.4) | 39 (%15.6) |
| **NKP7 S1** | 205 (%82) | 45 (%18) |
| **NKP8 S1** | 190 (%76) | 60 (%24) |
| **NKP9 S1** | 184 (%73.6) | 66 (%26.4) |
| **NKP10 S1** | 195 (%78) | 55 (%22) |
| **NKP11 S1** | 177 (%70.8) | 73 (%29.2) |

According to table 4.2 NKP is Nutrition Knowledge and Practice, the second section of the questionnaire includes 11 items related to the research objective. For the first question, 66.4% of the responders answered yes and 33.6% answered no. Second question, 77.2% of the responders answered yes and 22.8% answered no. Third question, 76% of the responders answered yes and 24% answered no. Fourth question, 76.4% of the responders answered yes and 23.6% answered no. Fifth question, 82.4% of the responders answered yes and 17.6% answered no. sixth question, 84.4% of the responders answered yes and 17.6% answered no. Seventh question, 82% of the responders answered yes and 18% answered no. Eighth question, 76% of the responders answered yes and 24% answered no. Ninth question, 73.6% of the responders answered yes and 26.4% answered no. Tenth question, 78% of the responders answered yes and 22% answered no. and the last question, 70.8% of the responders answered yes and 29.2% answered no.

Descriptive Analysis for Nutritional Knowledge N(%250)

|  |  |  |
| --- | --- | --- |
| NKP Section 2 MCQ | Frequency | Percentage (%) |
| NKP1 S2  \*Very important  Not very important  It doesn’t matter | 190  42  18  **Total :250** | 76  16.8  7.2  **Total :100** |
| NK P2 S2  Underweight  \*Overweight  Obese | 10  214  26  **Total :250** | 4  85.6  10.4  **Total :100** |
| NKP 3 S2  Albumin  \*Casien  Ovalbumin | 50  163  36  **Total :250** | 20  65.5  14.5  **Total :100** |
| NKP4 S2  Iron  \*Protein  Fat | 104  113  33  **Total :250** | 41.6  45.2  13.2  **Total :100** |
| NKP5 S2  \*Meat  Whole Grains  Fruit | 97  112  41  **Total :250** | 38.8  44.8  16.4  **Total :100** |
| NKP 6 S2  More saturated fat  \*More trance-fat  Lower cholesterol | 71  135  42  **Total :250** | 28.4  54  16.8  **Total :100** |
| NKP7 S2  Saturated fatty acid  \*Monounsaturated fatty acids  Polyunsaturated fatty acid | 60  148  42  **Total :250** | 24  59.2  16.8  **Total :100** |
| NKP8 S2  \*Tomatoes  Cauliflower  Oranges | 100  118  31  **Total :250** | 40.2  47.2  12.4  **Total :100** |
| NKP9 S2  Low  Medium  \*high | 91  102  56  **Total :250** | 36.4  40.8  22.4  **Total :100** |
|  |  |  |
|  |  |  |  |
|  |  |  |
| NKP10 S2  Ice cream  \*Rice  Banana | 78  97  75  **Total :250** | 31.2  38.8  30  **Total :100** |
| NKP11 S2  Sodium  Saturated fat  \*Omega 3 | 31  117  102  **Total :250** | 12.4  46.8  40.8  **Total :100** |
| NKP12 S2  \*Soluble fiber  Insoluble fiber  Wheat bran  All | 68  90  52  40  **Total :250** | 27.2  36.0  20.8  16.0  **Total :100** |
| NKP13 S2  dietary cholesterol  unsaturated fat  \*saturated fat  simple sugars | 62  93  56  39  **Total :250** | 24.8  37.2  22.4  15.6  **Total :100** |
| NKP14 S2  Iron  Thiamin (B1)  \*Potassium | 42  126  82  **Total :250** | 16.8  50.4  32.8  **Total :100** |
| NKP 15 S2  \*Folate  Calcium  Copper | 136  76  38  **Total :250** | 54.4  30.4  15.2  **Total :100** |
| NKP16 S2  Vitamin A  Vitamin D  \*Vitamin K | 53  126  71  **Total :250** | 21.2  50.4  28.4  **Total :100** |
| NKP17 S2  Albumin  \*Gluten  Soy protein  Casein | 53  147  34  15  **Total :250** | 21.2  58.8  13.6  6  **Total :100** |
| NKP18 S2  Diabetes  Cardiovascular disease  Osteoporosis  \*All of the above | 48  91  41  **70**  **Total :250** | 19.2  36.4  16.4  28.0  **Total :100** |
| NKP19S2  \*Mediterranean Diet  DASH Diet  Kito Diet  Low glycemic index  Intermittent Diet  None | 62  66  35  57  23  7  **Total :250** | 24.8  26.4  14.0  22.8  9.2  2.8  **Total :100** |
| NKP20 S2  Mediterranean Diet  \*DASH Diet  Kito Diet  Low glycemic index  Intermittent Diet  None | 61  99  30  27  22  11  **Total :250** | 24.4  39.6  12.0  10.8  8.8  4.4  **Total :100** |
| NKP21 S2  Mediterranean Diet  \*DASH Diet  Kito Diet  \*Low glycemic index  intermittent Diet mic index  None | 91  54  41  19  34  11  **Total :250** | 36.4  21.6  16.4  7.6  13.6  4.4  **Total :100** |

Section three in the questionnaire includes twenty-four elements about Nutritional Knowledge and practice- MCQ Questions. The detailed data of each item is presented in table 4.3. for this section, the highest percentages will be focused on for each items.

The majority of the respondents answered question one as it’s very important to teach nutritional courses in medical college and the percentage is 76%. However, about 25% of the physicians were not so interested to have training in nutrition. Many published papers stated the importance of nutritional education for physicians to provide better healthcare to their patients (DiMaria-Ghalili, 2013). For instance, a published article on the BBS mentioned that 80% of the patients visited their GP in the UK were linked to lifestyle and diet. Additionally, the report stated that medical students claimed that they learn nothing about nutrition. This controversial argument need to be taken seriously and as a results more training on nutrition and courses are need for medical students and physician to cope with situation of current patient’s diet-related diseases (Dillon, 2028).

For question two, the question asked about the BMI of an adult if it is between 25-29.9, 85.6% of the responders answered as it is overweight which this indicated that they have knowledge about the BMI ranges. Question three asked about main protein in human milk, 65.5% of the responders chose Casein which is the correct answer. Question four asked about which nutrient may increase body calcium loss, 45.2% of the responders chose Protein which is the correct answer. Question five asked about the most concentrated source of vitamin B12, %44.8 of the responders chose whole grains as the main source of Vitamin B12. Question six asked about “Compared with unprocessed vegetable oil, hydrogenated fats contain”, 54% of the responders thought that it contains more trance-fat. Question seven in the questionnaire asked about “The major type of fat in olive oil is”, 59.2% of the responders chose Monounsaturated fatty acids. Question eight asked about the fruits & vegetables which is a rich source of lycopene, 47.2% of the responders chose cauliflower as it is rich in lycopene. Question nine asked about the amount of salt in processed red meat, 40.8% of the responders thought that red meat contains medium salt. Question ten asked “Which of the following foods have the lowest glycemic index?”, 38.8% of the responders chose Rice as it has the lowest glycemic index. Question eleven asked “Which of the following nutrient decrease the symptoms of inflammation?”, 46.8% of the responders chose saturated fat as it helps in decreasing the symptoms of inflammation. Question twelve asked “What type of dietary fiber is helpful in lowering blood cholesterol levels?”, 36% of the responders chose Insoluble fiber as a source of lowering blood cholesterol level. Question thirteen asked “Which dietary factor is most responsible for increasing serum cholesterol levels?”, 37.2% of the responders answered this question as it is unsaturated fat that increase serum cholesterol levels in blood. Moreover, question fourteen asked “Which of the following nutrients protect against hypertension?”, 50.4% of the responders chose Thiamin (B1) as it protects against hypertension. For question fifteen, 54.4% of the responders chose Folate as a nutrient that is strongly associated with the prevention of neural tube defects. Question sixteen asked “Which of the following vitamins plays a critical role in thrombosis?”, 50.4% of the responders chose Vitamin D that plays a critical role in thrombosis. Question seventeen asked “Individuals with celiac disease are advised to avoid foods containing rye, wheat, and barley because they are sensitive to which of the following proteins?”, 58.8% of the responders chose Gluten which is the correct answer. Question eighteen asked “Which of the following medical conditions are associated with obesity?”, 36.4% of the responders chose Cardiovascular disease as a medical condition that is associated with obesity. Question nineteen asked “Which of the following diet plan do you recommend for Diabetics (DM)?”, 26.4% of the responders chose DASH Diet as the most suitable diet plan for Diabetics. Question twenty asked “Which of the following diet plan do you recommend for hypertension?”, 39.6% of the responders thought that DASH Diet is the best diet plan for hypertension. Question twenty-one asked “Which of the following diets is more appropriate to reduce cardiovascular diseases?”, 36.4% of the responders chose Mediterranean Diet as an appropriate diet to reduce cardiovascular diseases.

Table 4.4: Section 3-Descriptive Analysis N(%250)

|  |  |  |  |
| --- | --- | --- | --- |
| **Items**  **NKP S3** | **D**  ***f***  **(%)** | **U**  ***f***  **(%)** | **A**  ***f***  **(%)** |
| NKP1 S3 | 65 (%26) | 98 (%39.2) | 86 (%34.4) |
| NKP2 S3 | 53 (%21.2) | 84 (%33.6) | 112 (%44.8) |
| NKP3 S3 | 27 (%10.8) | 60 (%24) | 163 (%65.2) |
| NKP4 S3 | 21 (%8.4) | 71 (%28.4) | 158 (%63.2) |
| NKP5 S3 | 32 (%12.8) | 62 (%24.8) | 155 (%62) |
| NKP6 S3 | 22 (%8.8) | 59 (%23.6) | 167 (%66.8) |
| NKP7 S3 | 22 (%8.8) | 68 (%27.2) | 158 (%63.2) |
| NKP8 S3 | 28 (%11.2) | 74 (%29.6) | 147 (%58.8) |
| NKP9 S3 | 23 (%9.2) | 92 (%36.8) | 134 (%53.6) |
| NKP10 S3 | 34 (%13.6) | 80 (%32) | 136 (%54.4) |
| NKP11 S3 | 28 (%11.2) | 74 (29.6) | 147 (%58.8) |

According to table 4.4, section 3 of the questionnaire is the last section that includes 11 items with the choices of Disagree (D), Uncertain (U), and Agree (A). The first item is “Most physicians are NOT adequately trained to discuss nutrition issues with patients”, 26% of the responders were disagree, 39.2% of the responders were uncertain and 34.4% were agree. This data indicates that there is a gap in the curriculum of the physicians because any nutritional issues can affect the human body. The second item is “Nutrition counselling is Not an effective use of my time”, 21.2% of the responders were disagree, 33.6% of the responders were uncertain and 44.8% were agree. This shows that the majority of the physicians who answered the questionnaire do not rely on nutrition counselling as a procedure to help the patients. Further, the third item is “A patient’s weight should be taken always at admission or during consultation?”, the data for this item is; 10.8% disagree, 24% uncertain, and 65.2% agree. In this case, the majority of the physicians were agreed upon the idea that a person’s weight should be taken into consideration while consulting a patient. The fourth item is “All malnourished patients require individualized treatment by a dietitian”, 8.4% of the responders were agree, 28.4% were uncertain, and 63.2% were agree. This data also indicates that the physicians are agree that the malnourished patients require individualized treatment by a dietitian. The fifth item in this section is “Discussing physical activity and nutrition information with patients in the general practice is my responsibility”, 12.8% of the responders were disagree, 24.8% were uncertain, 62% were agree. This clarify that the majority of the physicians think that discussing nutrition information with the patients in the general practice is their responsibility. The sixth item is “Monitoring food intake is a good way to determine a patient’s nutritional status”, the data for this item is; 8.8% disagree, 23.6% uncertain, and 66.8% agree. This shows that it is very significant to monitor food intake to determine a patient’s nutritional status by the physicians. The seventh item is “I am knowledgeable about nutrition concern of a patients with Glycemic index intolerances, mal-digestion or malabsorption.”, the data is as follows; 8.8% disagree, 27.2% uncertain, and 63.2% agree. This shows the knowledge that the physicians have about the patient’s nutrition concern. The eighth item is “I am knowledgeable about the potentially harmful interactions of medications with herbal supplements and foods.”, the data is as follows; 11.2% disagree, 29.6% uncertain, and 58.8% agree. This data indicates that the majority of the physicians are knowledgeable about the potentially harmful interactions of medications with herbal supplements and foods. The ninth item is “I am knowledgeable about indications for enteral and parental nutrition.”, 9.2% of the responders chose disagree, 36.8% chose uncertain, and 53.6% chose agree. The data is the indicator of the physicians knowledge about indications for enteral and parental nutrition which is a very good thing to consider. The tenth item is “I am comfortable providing examples of serving sizes of meat or dairy.”, 13.6% chose disagree, 32% chose uncertain, and 54.4% chose disagree. This shows that the majority of the physicians are comfortable with providing examples of serving sized od f meat or dairy to the patients. The last item in this section is “I am knowledgeable about nutrition concern of a patients with GI intolerances, mal-digestion or malabsorption.”, 11.2% of the responders chose disagree, 29.6% chose uncertain, and 58.8% chose agree. The data shows that the physicians are knowledgeable enough about nutrition concern of a patient with GI intolerances, mal-digestion or malabsorption.

# 4.4 ANOVA Test

An ANOVA test is a statistical test used to determine if there is a statistically significant difference between two or more categorical groups by testing for differences of means using a variance.

Table 4.5: ANOVA Test N(%250)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ANOVA** | | | | | |
| A. Age groups: | | | | | |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 1.209 | 2 | .604 | 1.015 | .364 |
| Within Groups | 146.414 | 246 | .595 |  |  |
| Total | 147.622 | 248 |  |  |  |

H0: There is no significant different between Nutritional knowledge, attitudes and practice with Age groups

H1: There is a significant different between nutritional knowledge, attitudes and practice with Age

To assess the differences in Nutritional knowledge, attitudes and practice across age group. aone-way ANOVA was used. The degree of freedom between groups and within groups may be determined using the one-way ANOVA table. The alpha is greater than the significant value. As a result, we may infer that there is no significant association nutritional knowledge, attitudes and practice with Age.

Indicating that it fails to reject H0 since the significant value is more than the alpha value, 0.05 level which is 0.364.

Table 4.6: Level of knowledge of participants according to Professional Qualification N(%250)

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P.G. Diploma/ Master | P.G. Diploma/ Master | PhD/Board | Professional qualification in Nutrition/ Dietetics |
| Low | 15(33.3) | 13(15.3) | 16(15.1) | 9(64.3) |
| Moderate | 25(55.6) | 70(82.4) | 84(79.2) | 5(35.7) |
| High | 5(11.1) | 2(2.4) | 6(5.7) | 0(0.0) |

Based on Table 4.6, the level of knowledge of participants according to professional qualifications by education type, P.G. Diploma/Master have three stages Low 15(33.3), Moderate 25(55.6) and High 5(11.1). P.G Diploma/Master also have the stages of Low 13(15.3), Moderate 70(82.4) and High 2(2.4). There is also three stages for PhD/Board which is Low 16(15.1), Moderate is 84(79.2), and High is 6(5.7) Professional Qualification in Nutrition/ Dietetic have three stages that are Low 9(64.3), Moderate 5(35.7), and High 0(0.0)

Table 4.7: Level of knowledge of participants according to work experience N(%250)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1-9 years | 10-19 years | 20-29 years | 30 years and over | total |
| Low | 31(49.6) | 1(4.34) | 14(28.5) | 7(38.9) | 53 |
| Moderate | 121(37.6) | 17(73.9) | 35(71.42) | 11(61.1) | 184 |
| High | 8(12.8) | 5(21.7) | 0(0) | 0(0) | 13 |
| Chi-square | =1.721, Pv=0.423 | | | | |

The Chi-square test that have been applied yields P value of 0.423 that the value is bigger than the critical value of 0.05, which means have to reject the null hypothesis.

The level of knowledge of participants according to work experience is significance however its P value is more than 0.05.

**CHAPTER FIVE**

# CONCLUSION, RECOMMENDATION, LIMITATION

# 5.1 Conclusion

A crucial component of health promotion is nutrition knowledge, nutrition helps control and prevent numerous diseases, particularly diabetes and hypertension. Humans must pay particular attention to nutrition throughout several times of the life cycle, including preconception, pregnancy, lactation, childhood, adolescence, menopause, and old age. Despite a significant worsening in the multidimensional burden of undernutrition, over nutrition, non-communicable diseases (NCDs), and related comorbidities, nutritional engagement in the care process is frequently overlooked in poor countries. Education in nutrition is essential for the physicians for promoting good eating practices. To enhance dietary behaviors, knowledge of nutrition may be sufficient on its own; it may also be necessary to foster a favorable attitude toward sensible eating practices. There is an even greater need to equip people with accurate knowledge and attitudes for making acceptable food preferences given the current shift in eating habits toward the western diet and an increase in television food advertisements. If the physicians offer effective dietary counseling and recommendations, morbidity and mortality may be increased in health care systems. New scientific findings lead to modifications in nutritional understanding. Since they are primarily focused on treating medical conditions rather than promoting health or nutrition, they must be aware of trustworthy sources of education and information relevant to their practice and patient care. Based on the research finding; care for patients' nutritional needs should be a regular aspect of patient care. The information gathered for this study revealed that the physicians had just a modest understanding of nutrition that needs to be improved through various training and reading.

# 5.2 Recommendations

1. The issue can be resolved and the workload in nutrition for non-specialists eliminated by hiring nutritionists at various medical levels.
2. To better meet the needs of students and support their skills, nutrition curricula in medical schools must be improved. This will boost students' confidence in giving nutritional advice to patients and enhance the processes of examination, diagnosis, and carrying out appropriate interventions for health conditions.
3. Increasing the number of hours spent on nutritional education and adding some optional lectures on nutrition for doctors who want to learn more about nutrition to medical curricula.
4. It may be important and appropriate to encourage doctors to use excellent nutritional practices with their patients and to provide them with the training necessary for them to do so.

# 5.3 Limitations

1. The study's limited sample size is regarded as a limitation.

2. Another limitation of this study is the lack of the physicians’ time that made the data collection process to extend.

3. the lack of the Kurdish library in the resources for such kind of subjects is another limitation that the researchers encountered during the study.

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# A picture containing text, gambling house, scene, room Description automatically generatedAPPENDIX

زانکۆی جیهان -هەولێر

کۆلێژی تەکنۆلۆژیای تەندروستی

بةشي نيوتريشن ودايةتيَتكس

ب/ توێژینەوەی زانستی

**ئەم ڕاپرسییە لە چوارچێوەی پڕۆژەیەکی توێژینەوەی زانستیە ئەنجام دەدرێت لەلایەن ئەم قوتابیانە ( هێمن لطیف حمد ، هریز یاسین طیفور ، پێشەوا محمد قادر، ڕەوشە عزدین شمسدین ، ئاڤان عجیل علی ) بە سەرپەرشتی دکتۆر ساڵح مصطفی ساڵح له بەشی نیوتریشن - زانکۆی جیهان- هەولێر.**

**ئامانج لەم توێژینەوەیە وەرگرتنی زانینی زانیاری خۆراکیەکانە لە هەڵوێست و کرداردا لە نێو پزیشکانە لە شاری هەولێر بەرەچاو کردنی زانست و زانیاریان لە بوار و پیشەکەی خۆیان بۆ بواری خۆراك و ڕێجیم بەرنامەی خۆراکی لە نێو نۆرینگەو نە خۆشخانە.**

**ئێمە دەمانەوێت جەخت لەوە بکەینەوە کە هەموو وەڵامەکان بە تەواوی نهێنین؛ ئێمە داوای ناوی تۆ یان هەر زانیارییەکی تایبەتی ناسینەوەی کەسی کۆناکەینەوە. ڕاپرسییەکە لەگەڵ مەرجەکانی پێداچوونەوەی ئەخلاقی زانکۆی جیهان دەگونجێت . ئەگەر بڕیارت دا بەشداری بکەیت، داوات لێدەکرێت ڕاپرسییەک پڕبکەیتەوە. ڕاپرسییەکە لە ١٠ خولەک زیاتر نەخایەنێت و هیوادارم بەڕێژەی لە ١٠٠ ٪ وەڵامەکان وەربگرم.**

**ئەگەر هەر پرسیارێکتان هەیە سەبارەت بەم توێژینەوەیە، دەتوانن پەیوەندیمان پێوە بکەن بە ژ.م 07508512684 یان 07503642021 بۆ پرسیارەکانتان سەبارەت بە مافەکانتان وەک بەشداربوویەکی توێژینەوە، دەتوانن ئیمەیڵمان بۆ بنێرن بەم ناونیشانە:**

[**Harezehizr@yahoo.com**](mailto:Harezehizr@yahoo.com)**یان** [**hemnlatef87@gmail.com**](mailto:hemnlatef87@gmail.com)

**Participation Consent Form**

**Title of the project: “Nutritional knowledge, attitudes and Practice among Physicians in Erbil City”.**

**The following questionnaire is part of the graduation project of students of Nutrition and Dietetics department, Cihan University-Erbil. The information we acquire will only be used for the research purposes and your participation is highly valued.**

**The details of the study have been provided to me in writing and explained to me in a language I am comfortable with. I confirm that I have understood the above study and had the opportunity to ask questions. I understand that my participation in the study is voluntary and that I am free to withdraw at any time and without giving any reason. I agree not to restrict the use of any data or results that arise from this study provided such that use is only for scientific purpose(s). I fully consent to participate in the above study.**

**Signature of the participant: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Signature of the investigator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**………………………………………………………………………………………………………**

**Note: Please tick ( ) the most appropriates answer. **

Demographic Section:

A.      Age:………………….

B.      Gender:

Male                        Female

C.      Workplace/ occupation:

Governmental Hospital Primary healthcare Canters    Private Hospital

Private Clinic/ Centers         All

D.      Working Experience in practice/ Year

Number of years after college graduation: -----------------------

E.      Professional Qualification:

MBBCh P.G. Diploma/ Master  PhD/Board

 Professional qualification in Nutrition/ Dietetics

F.   Country of obtaining your Highest Degree:

Inside Kurdistan and Iraq Outside Kurdistan and Iraq

G. What is your current professional status?

G.P. General practitioners (GPs) Medical Internal Resident

Specialist/ Registered Consultant Senior Register Other -----------

H. Are you working in academia/ university?

Yes No

I. What is your current specialization?

Intensive care Endocrinology Pediatric Family Medicine Orthopedic

Surgery Obstetrics and Gynecology Otolaryngology Other-------------

J. Have you attended any nutritional training course?

Yes No

Questionnaire Section/ Nutritional Knowledge and practice- Yes or No

1. Do you know the role of nutritionist/ dietitians?

Yes                     No

If yes, please explain ---------------------------------------------------------------------------------------

1. Are you aware of the current Dietary Reference Intake Guidelines?

Yes                     No

1. Do you know how to calculate BMI and waist-to-hip ratio?

Yes                      No

1. Have you ever referred a patient to a nutritionist-dietitian?

Yes                      No

1. Do you think it’s important to refer a patient with diabetes for detailed dietary counseling?

Yes                      No

1. Do you agree to discuss the importance of diet during consultation?

Yes                      No

1. Do you think it’s important to assess patient’s ability to read food label?

Yes                      No

1. Does patient under dialysis need more protein than advised rate for normal people?

Yes No

1. Those with calcium oxalate kidney stone should restrict their calcium intake

Yes No

1. Those with kidney failure may consume half of the protein advised for normal people

Yes No

1. As the day passes, cancer patients gain a better appetite

Yes No

Questionnaire Section/ Nutritional Knowledge and practice- MCQ Questions

1. How important to teach nutritional courses in medical college?

Very important Not very important It does not matter

1. If the BMI of an adult is between 25-29.9, that indicates the individual is:

Underweight Overweight Obese

1. Which is the main protein in human milk?

Albumin Casein Ovalbumin

1. Excessive intake of which nutrient may increase body calcium loss?

Iron Protein Fat

1. The most concentrated source of vitamin B12 is:

Meat Whole grains Fruit

1. Compared with unprocessed vegetable oil, hydrogenated fats contain:

More saturated fat More trans- fat Lower cholesterol

1. The major type of fat in olive oil is:

Saturated fatty acid Monounsaturated fatty acids Polyunsaturated fatty acid

1. Which of the following fruits & vegetables is a rich source of lycopene?

Tomatoes Cauliflower Oranges

1. What do you think of the amount of salt in processed red meat?

Low medium high

1. Which of the following foods have the lowest glycemic index?

Ice cream Rice Banana

1. Which of the following nutrient decrease the symptoms of inflammation?

Sodium Saturated fat Omega 3

1. What type of dietary fiber is helpful in lowering blood cholesterol levels?

Soluble fiber Insoluble fiber Wheat bran All

1. Which dietary factor is most responsible for increasing serum cholesterol levels?

dietary cholesterol unsaturated fat  saturated fat simple sugars

1. Which of the following nutrients protect against hypertension?

Iron Thiamin (B1) Potassium

1. A nutrient that is strongly associated with the prevention of neural tube defects is:

Folate Calcium Copper

1. Which of the following vitamins plays a critical role in thrombosis?

Vitamin A Vitamin D Vitamin K

1. Individuals with celiac disease are advised to avoid foods containing rye, wheat, and barley because they are sensitive to which of the following proteins?

Albumin Gluten Soy protein Casein

1. Which of the following medical conditions are associated with obesity?

Diabetes Cardiovascular disease Osteoporosis All of the above

1. Which of the following diet plan do you recommend for Diabetics(DM)?

You can tick more than one answer:

Mediterranean Diet  DASH Diet        Kito Diet

Low glycemic index         Intermittent Diet   None

1. Which of the following diet plan do you recommend for hypertension?

You can tick more than one answer:

Mediterranean Diet  DASH Diet        Kito Diet

Low glycemic index         Intermittent Diet   None

1. Which of the following diets is more appropriate to reduce cardiovascular diseases?

You can tick more than one answer:

Mediterranean Diet  DASH Diet        Kito Diet

Low glycemic index         Intermittent Diet   None

1. What are the recommended dietary reference intakes (DRIs) of the following nutrients to maintain a healthy body weight?

Protein -------------------- gram/1kg of body weight per day

Calorie intake needed ------------- kcal/ day for men, and ----------------- kcal/ day for women,

Salt --------------- gram/ day, and Fat ---------------- gram/ day

1. Energy is provided by protein, fat & carbohydrate, how many Kilocalories are intake by:

One gram of fat/ lipid gives ----------------kcal. One gram of Protein gives -------------- kcal.

One gram of Carbohydrate gives ------------- kcal. One gram of water gives ------------- kcal.

1. The total calories intake of a healthy adult come from:

45 to 65% of total calorie intake come from------------------

10% to 35% of total calories intake come from --------------

20-35% of total calories intake come from --------------------

Questionnaire on Nutritional Knowledge & practice- Agree---- Disagree

1. Most physicians are NOT adequately trained to discuss nutrition issues with patients.

Disagree                      Uncertain                         Agree

1. Nutrition counselling is Not an effective use of my time.

Disagree                      Uncertain                         Agree

1. A patient’s weight should be taken always at admission or during consultation?

Disagree                      Uncertain                         Agree

1. All malnourished patients require individualized treatment by a dietitian.

Disagree                      Uncertain                         Agree

1. Discussing physical activity and nutrition information with patients in the general practice is my responsibility.

Disagree                      Uncertain                        Agree

1. Monitoring food intake is a good way to determine a patient’s nutritional status.

Disagree                      Uncertain                         Agree

1. I am knowledgeable about nutrition concern of a patients with Glycemic index intolerances, mal-digestion or malabsorption.

Disagree                      Uncertain                         Agree

1. I am knowledgeable about the potentially harmful interactions of medications with herbal supplements and foods.

Disagree                      Uncertain                         Agree

1. I am knowledgeable about indications for enteral and parental nutrition.

Disagree                      Uncertain                         Agree

1. I am comfortable providing examples of serving sizes of meat or dairy.

Disagree                      Uncertain                         Agree

1. I am knowledgeable about nutrition concern of a patients with GI intolerances, mal-digestion or malabsorption.

Disagree                      Uncertain                         Agree

**THANK YOU FOR YOUR COOPERATION!**