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Obesity Relationship with Vitamin D and Calcium in People Eating for Fish

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Abstract---This study was conducted on (120) people (60 males and 60 females) in different regions of Salah al-Din Governorate, namely Samarra, Ishaqi and Balad for the period from 1/1/2020 to 5/1/2021. The persons were divided into four groups (30 males and 30 females). They eat fish and (30 males and 30 females) do not eat fish. The results showed that there were significant ($P<0.05$) differences between the average weights of the four groups, and the highest average value was (80.27) kg for males who did not eat fish. It was also found that there were significant ($P<0.05$) differences in the value of Vit.D, and the highest average value was (29.94 nanograms./ml) in the males who eat fish, and the largest value was (35.23 nanograms/ml) in the weight group (90 kg), and significant differences ($P<0.05$) were found in the value of calcium, and the highest average value was (8.53 mg/ml) in The males who ate fish had the highest value (8.76 mg/ml) in the weight category (80 kg).

Keywords---calcium, eating fish, obesity, people, vitamin D.

Introduction

Fish contain fats, which vary in percentages depending on the type of fish and fishing season. Some, including tilapia, white fish, grouper, plaice, and shrimp, have low fat percentages of 5 to 2 percent, while others, like Kingfish, sardines, herring, mullet, and salmon, have high fat percentages of 20 percent or more. Fish oil includes a high percentage of unsaturated fatty acids, particularly omega-3, which helps lower cholesterol levels in human blood. Fish oil also contains a number of vital fat-soluble vitamins such as vitamin A and D. (1). Malnutrition, which refers to the insufficient, excessive, or unbalanced consumption of food materials and components, leads to the appearance of some of the major

nutritional illnesses, is the cause of a shortage of vitamins and minerals. A dinner that is not made up of healthy foods, but rather continues to eat bad foods (2). Malnutrition can also cause rickets owing to calcium shortage caused by a lack of vitamin D, as vitamin D deficiency causes a variety of disorders, including rickets, dementia, Alzheimer's, and numerous diseases caused by a lack of immunity(3). Vitamin D is a fat-soluble vitamin that comes from the vitamin D family, which comprises D1, D2, and D3 (4). It aids in the absorption of calcium and phosphorous, two essential elements that the body requires as a supplement to maintain overall health and bone health. The latter has long been linked to rickets, particularly in children. Children who are deficient in particular vitamins are more likely to acquire this illness (5).

Material and Methods

Sample collection

Between December 2020 and the end of February 2021, samples were gathered from several districts of Salah al-Din Governorate, including Samarra and Balad. A total of 120 blood samples were used in this study. Groups of fish eaters: A group of fish eaters collected 60 samples of fish eaters, 30 samples from males of various ages and 30 samples from women of various ages.

Collecting samples

The blood samples for this investigation were taken by extracting 5 cm³ of venous blood from a medical syringe that was only used once. The blood was collected and placed in Gel tubes with a tight lid, which were then centrifuged for a length of time. The serum was drained using a micropipette after 10 minutes at 3000 rpm, then separated into various portions, distributed in an Eppendorf tube, and stored frozen until biochemical parameters were evaluated. The calcium was tested using a colorimetric approach using a spectrophotometer, while serum vitamin D was determined using established methods of ELISA kits given by (CUSABIO, USA).

Statistical analysis

The results statically analyzed by using SSPS version 11.5, and data analysis was carried out by using (ANOVA)

Results and Discussion

The findings of distributing samples based on the weight of the study participants revealed that guys who do not eat fish are more likely to have larger weights, with some weighing up to 120 kg, and the situation is similar in women. These findings may corroborate those found in a previous study by Spencer (6), who found that weight associated with age varies depending on the type of dietary pattern followed by the group, rising in men who eat meat (24.41 kg/m), women who eat meat (23.52 kg/m), men who eat meat but eat fish and vegetarians (22.49 kg/m), and women who eat fish and vegetarians (21.98 kg/m). Furthermore, the findings back with the findings of Europe's largest study, which

comprised 65,000 people separated into vegetarians, meat eaters, and fish eaters. Meat eaters had the highest average body mass, followed by fish eaters and vegetarians (23.6 kg/m, 23.5 kg/m, and 22.5 kg/m, respectively) in this study (7). Where the weight will be a primary emphasis in our research and how it relates to other criteria.

- Relationship of weight groups to the level of vitamin D

The findings of this study revealed that males who eat fish have the greatest levels of vitamin D, followed by women who eat fish, men who don't eat fish, and women who don't eat fish. As shown in Figure 1.

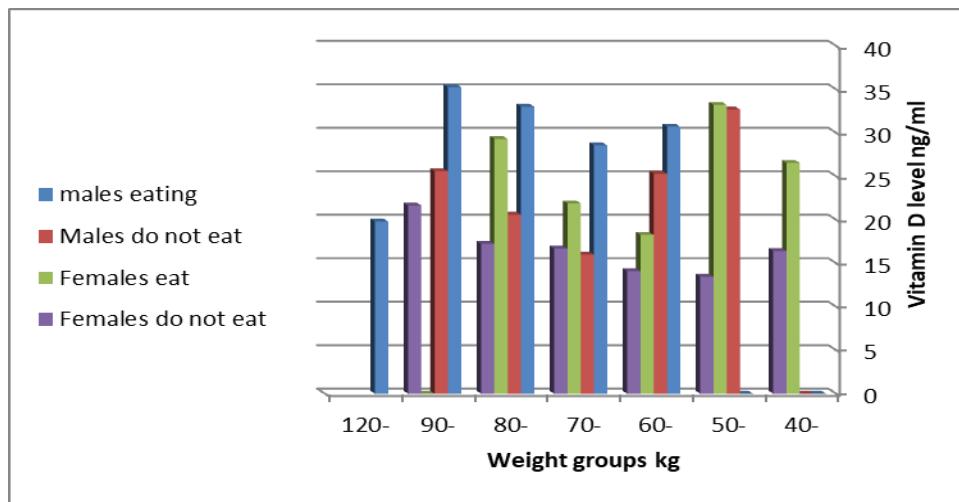


Figure 1. Relationship between weight groups and vitamin D levels

The findings of this study on vitamin D are comparable to those of a previous study by (Hajhashemy)(8), which revealed that men who eat fish have a higher percentage of vitamin D than those who do not eat fish, while females who consume fish have a lower percentage of vitamin D. The highest percentage of vitamin D for guys who ate fish was at a weight of 90 kg, and the lowest percentage of vitamin D for males who ate fish was at a weight of 120 kg, as the results show. The results revealed that at a weight of 50 kg, males who did not eat fish had the highest percentage of vitamin D, and at a weight of 70 kg, males who did not eat fish had the lowest percentage. The study discovered that the maximum percentage of vitamin D in fish-eating females was at a weight of 50 kg, with the lowest proportion at a weight of 60 kg, while the highest percentage in non-fish-eating females was at a weight of 100 kg, with the lowest percentage at a weight of 50 kg. The inverse association between obesity and vitamin D % is seen in this natural sequence of data (9). Due to the fact that vitamin D is a fat-soluble vitamin, it can be deposited in the fatty tissues of obese individuals, resulting in a drop in its levels in the body, the higher the weight, the lower the percentage of vitamin D. The body with which the findings of this study agree (Earthman) (10). The BMI, on the other hand, rises when the risk of vitamin D deficiency rises (11). Vitamin D deficiency in obese people is caused by a variety of factors, including low nutritional intake in response to diet, vitamin D solubility in obese people's

adipose tissues, and finally, reduced exposure to sunlight as a result of a sedentary lifestyle and decreased physical activity, as well as posture. Poverty and hunger are examples of economic situations (12). and that the low levels in women in general are related to a lack of exposure to sunlight, as men's time spent in the sun increases when compared to women in this study, and this is mirrored in men's increased vitamin D concentration. In addition to Iraqi society's conservative norms, such as wearing Islamic clothing and wearing the veil, it has a detrimental impact on sun exposure time since areas of the body are not exposed to sunlight, lowering vitamin D concentration. The findings of this study revealed an unexpected increase in vitamin D content in females who do not eat fish at weights approaching 100 kg, which could be attributable to the limited sample size.

- Relationship of weight groups to calcium level

The males who ate fish at the weights of 80 and 90 kg had the highest percentage of calcium, followed by the fish-eating females at the weights of 50 and 40 kg, then the males who did not eat fish at the weight of 50 kg, then the fish-eating females at the weight of 40 kg, and the non-females Fish eaters at the weight of 50 kg had the lowest level of calcium. As shown in Figure 2

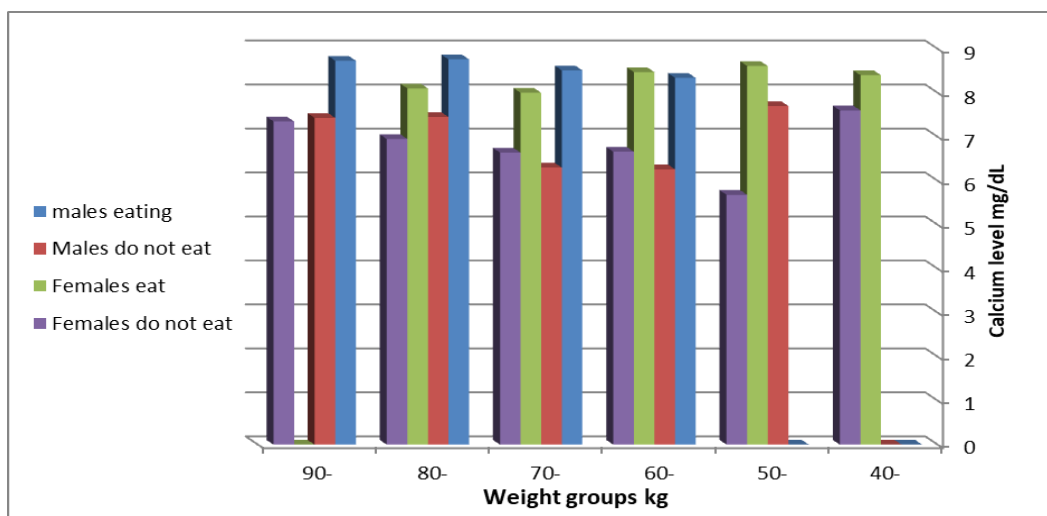


Figure 2. Relationship between weight groups and calcium level

The findings are consistent with those of (Naylor) (13). that the results are normal in light of the vitamin D levels in this study, which found that high fish consumption can enhance diets in terms of micronutrients such as iron, calcium, vitamin B12, zinc, and omega-3 fatty acids for seafood. When compared to the overweight group with moderate calcium levels, females with a normal BMI ingested fish at least twice a week, according to a research (14). Fish oil (salmon, trout, swordfish, sturgeon, cisco, white fish, mackerel, tuna, sardines, rockfish, tilapia, flounder) has been demonstrated in other research to play a substantial effect in raising vitamin D levels in the body (15). Calcium absorption is improved, inflammation is reduced, and neuromuscular and immunological processes are modulated. (16).

Conclusion

According to the findings of this study, eating fish helps raise vitamin D levels and raises calcium concentration, and obesity is inversely linked to vitamin D concentration in the serum.

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