المجلة العراقية لبحوث السوق وحماية المستهلك

COMPARISON BETEEEN THE CONSUMPTION OF RED MEAT AND WHITE MEAT FOR ASAMPLE OF CITIZENS OF THE CITY OF BAGHDAD/ AN EXPLORATORY STUDY

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ABSTRACT

Three hundred Iraqi people participated in demographic and attitudes study about red and white meat consumption. The mean age of the participants was 50 SD ± 11 years (mean 30-72); 51% were females and 49% males, mostly in forties who lived ≥ 5 years in Baghdad. The results showed that 80% of individuals prefer red meat. A 90% of people prefer fresh meat compared to frozen and processed meat. A 60% of people buy meat from popular markets. Nearly 87% of respondents believe the improving of livestock sector is essential and 80% of people confirmed there are obstacles to development this sector. An 80% of participates thought the reasons of the high prices of local fresh meat is the lack of planning and support to livestock sector. A survey also include chronic diseases assessment, a 60% of the individuals suffer from some chronic diseases, 23% of them suffer from cardiovascular diseases, 13% from diabetes, 21% had arthritis, and 3% were exposed to various types of benign or malignant tumors. In addition, the study appeared 30% of the sample suffered from gastrointestinal diseases such as diarrhea, colic, colitis, and acidity of the stomach and 21% were suffering from urinary problems. It has noticed that there is risk factor of urinary system diseases, arthritis and diabetes with excessive consumption of red meat.
Keywords: Attitude, white meat, red meat, fresh meat, processed meat.

مقارنة بين المستهلك من اللحوم الحمراء و اللحوم البيضاء لعينة من مواطني مدينة بغداد... دراسة استطلاعية

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الخلاصة

شارك ثلاث مائة عراقي في هذه الدراسة الديموغرافية لتقييم سلوكيات استهلاك اللحوم الحمراء والبيضاء لديهم، كان متوسط عمر المشاركين 50 سنة SD±11 (المعدل 30-72) 51% كانوا إناث مقابل 49% ذكور اغلبهم في الأربعينيات من العمر يسكنون في مدينة بغداد منذ 5 سنوات فما فوق، أظهرت النتائج أن 80% من الأفراد يفضلون اللحوم الحمراء، كما كان هناك تفضيل للحوم الطازجة لدى 90% مقارنة باللحوم المجمدة، 60% من الافراد كانوا يتبضعون اللحوم من الأسواق الشعبية، كما اعتقد 87% من المشاركين أن تحسين قطاع تربية الماشية في البلاد أمر ضروري، و أكد 80% من الأشخاص وجود معوقات لهذا التطور، كما كشفت النتائج عن أسباب ارتفاع أسعار اللحوم الطازجة المحلية وهي الافتقار إلى التخطيط والدعم لتحسين الثروة الحيوانية، وقد تم اجراء مسح للمصابين بأمراض مزمنة فكان 60% من الأفراد يعانون من بعض الأمراض المزمنة، اذ ان 23% منهم يعانون من امراض القلب و الاوعية الدموية، بينما كان 21% مصابين بالتهاب المفاصل و13% مرض السكري و3% فقط تعرضوا لأنواع مختلفة من الأورام الحميدة والخبيثة، وكان 30% من العينة ممن عانى من أمراض الجهاز الهضمي مثل الإسهال والمغص والتهاب القولون وحموضة المعدة و21% ممن عانى من مشاكل في المسالك البولية، ولوحظ هناك عامل خطورة للإصابة بأمراض الجهاز البولي والتهاب المفاصل والسكري مع فرط تناول اللحوم الحمراء.
الكلمات المفتاحية: سلوكيات ، لحوم، بيضاء ، حمراء ، طازجة ، مصنعة.

INTRODUCTION

Iraq has a great wealth qualifies it to be at the forefront of rich countries, and Iraqi livestock meat is known with distinctive and delicious taste. The rural community has been more inclined to adopt a healthy diet and decent lifestyle, using mostly fresh meat, vegetables and fruits produced by them since there is efficacy due to a healthy rural lifestyle. Various types of meat are consumed in Iraq, including sheep, beef, and poultry, as well as river and marine fish species. There is a lack of interest or the growth of this wealth (**Al-Hayali & Abdul-Majeed 2019**). Red meat is the meat of mammals, and is the most controversial food in the history of nutrition, although it has been eaten since ancient period. Many studies believe that it can harm on health, carried out on red meat and its production have found these sources to be associated with many diseases and health disorders, such as the heart, urinary and digestive disturbances along with cancer. The technological revolution has made the meat consumed by humans today to become different from eaten in the past. It is well-known that in the past animals ate grass, insects, and other natural foods, these animals are different from born and raised in factories, fed on fodder, antibiotics and growth-promoting hormones (**Dagevos 2014; Alabbody 2018**).

White meat is a suitable food for all ages and contains many nutrients and low fat. Chicken breast is a high protein source, because 100 grams of it contain 64% of the daily-recommended amount of protein. Eating protein helps maintain muscle mass, build muscles and promote calcium essential for protecting bones and enhancing their health, in addition, eating protein helps increase the feeling of satiety and reduce the desire to eat. (**Franca *et al.,* 2015**).

Modern lifestyle has caused many health problems, as an example, has been some concern about finding N-Nitrosodibutylamine (NDBA) in some meat products, even in low concentrations. This unusual nitrosamine, which stimulates urinary bladder tumors in rats and other species, is attributed to the rubbery mesh used to bind cured meats after processing. Dibutylamine derivatives are used in the rubber industry and appear to convert to nitrate at some point, and then the compound NDBA migrates to the meat. Anytime food is exposed to rubber, the nitrosamines in the rubber can be expected to migrate slowly to cause these severe health problems in the future (**William 1999**). Food producers often add nitrates and nitrites to processed meats, such as bacon, ham, and sausages. These added compounds help prevent the growth of harmful bacteria and add a salty flavor. Nitrates and nitrites were previously considered as precursors of N-nitroso, which been classified as a human carcinogen due to its ability to form nitrogen compounds. The maximum permissible daily intake of nitrate and nitrite should not exceed 3.7 mg/ Kg and 0.07 mg/ Kg of body weight, respectively, as per the recommendations of the World Health Organization (**Liesbeth *et al.,* 2011**). It's important the behavior of diet, the health of meat and how to handle it properly, producing-eating animal products and properly disposing of leftovers, all these contribute to excellent health and a clean environment (**Sabri 2013; Alabbody *et al.,* 2018 ; Alabbody 2021**) .

The study aimed to identify the consumer behaviors about red and white meat consumption, and the impact of this behavior on the health and financial status by adopting the questionnaire method as a tool to survey a random sample of consumers in Baghdad city, Iraq.

METHODOLOGY

Design of the study

Descriptive analytical study.

Samples of the study

Three hundred people from Iraqi community were included in this survey.

Place of interviewing

The questionnaire process was conducted and the cases were interviewed at local markets of Baghdad districts, such as Al-Bayaa, Bab-Almu'adham, Al-Kadhimiya, and AlKarrada, including 30 butcher shops and 12 restaurants.

Setting of the study

The data were collected from June to September 2021. The mean age of participants was 50 SD±11 years (Average 30-72); 49% were males versus 51% females most of them are in their forties who have lived ≥ 5 years in Baghdad city or its suburbs. Most of the enrolled persons had a good financial level and from urban areas…. as in table 1

Informal, consent was obtained from all the participants before conducting the questionnaire, which was completed after taking the meal at the restaurant or while buying meat from the butcher. Performing the questionnaire included two parts:

Part l

Demographic questionnaire in which the information collected from each participant included gender, age, financial level, residence and health status along with the presence of a chronic disease or another healthy defect as cardiovascular disease, diabetes and arthritis.

Part 2

Behaviors of red and white meat consumption: the questionnaire included several questions about the qualities and varieties of the taken meats, in addition to a questionnaire about the purchasing power of the participant, as well as investing about the effect of these behaviors on the health status of some people suffering from some diseases and disorders.

Statistics

The data were analyzed using the descriptive statistics in SPSS software version 22 for comparison between variables to find odd ratio values in 95% confidence intervals (CIs) at a level of significantly lower than 0.05 (**Wu _et al._, 2016**).

Table (1): Socio-demographic and economic characteristics of the participants.

Variables	No. of cases	(%)
Gender		
Male	153	51
Female	147	49
Total	300	100
Age (years)　　　　　Mean: 50 SD ±12, Average (30-72)		
Age		
≤ 30	54	18
31-40	126	42
41-50	60	20
51-60	27	9
61-70	33	11
Total	300	100
Financial level		
Good	165	55
Medium	66	22
Weak	69	23
Total	300	100
Residence		
Urban	210	70
Rural	90	30
Total	300	100

It is noted in (Table 1) that the mean age of participants was 50 SD±11 years (Average 30-72); 49% were males versus 51% females most of them are in forties who have lived ≥ 5 years in Baghdad city or its suburbs. Most of the enrolled persons had a good financial level and from urban areas.

Table (2): People's attitudes to red and white meat consumption**.**

Characteristics of attitudes	Details	No.	(%)
As you know the most beneficial type of meat:	White	252	84
	Red	48	16
Total		300	100
The most favorite meat type	Red	240	80
	White	60	20
Total		300	100
The most favorite meat form:	Fresh	270	90
	Frozen	9	3
	Canned	21	7
Total		300	100
The most frequently purchased meat (local versus imported)	Local	200	67
	Import	100	33
Total		300	100
Does Iraq have the potential for livestock development?	Yes	261	87
	No	39	13
Total		300	100
Is there planning for local production and marketing?	Yes	60	20
	No	240	80
Total		300	100

It is noted in (Table 2) that 80% of the individuals preferred red meat despite their knowledge of the benefits of white meat. There was also a preference for fresh meat in 90% of the enrolled persons, compared with frozen and processed meat. A 67% of the individuals purchased local meat over imported one. In addition, 60% of people desire marketing meat from popular markets. Roughly, 87% of the participants believed that improving livestock breeding sector in the country is essential. Finally, 80% of the persons confirmed the existence of obstacles to this development**.**

Table (3): Chronic diseases present in the enrolled persons.

Characteristics	Details	No.	%
Had chronic diseases	Hypertension & Cardiovascular diseases	70	23
	Arthritis	62	21
	Diabetes	40	13
	Tumors or cancer	8	3
Total		180	60
Hadn't chronic diseases		120	40
Total		300	100
Had urinary problems	Yes	63	21
	No	237	79
Total		300	100
Had digestive problems	Yes	90	30
	No	210	70
Total		300	100

It is noted in (Table 3) that 23% of the individuals had hypertension and cardiovascular diseases, 21 of them had arthritis, 13% diabetes, and only 3% exposed to various types of benign and malignant tumors. Presence of urinary problems was 21% as stones in the kidneys or bladder or the sample have been either presence of nitrite, esters, or purulent cells in urine analysis. A 30% of the sample suffered from digestive system diseases such as diarrhea, colic and inflammation of the colon, stomach acidity or inflammation of the gallbladder.

Table (4): The risk estimation of people favours red meat and have some health problems.

Characteristic	Disease/ healthy	Value of Odds Ratio at 95% Confidence Interval
Preferring red meat over white meat	Hypertension / healthy	0.167 (.052-.533)
	Diabetes mellitus/ healthy	0.607 (.231-1.597)*
	Urinary problems/ healthy	0.366 (.133-1.011)*
	Gastrointestinal diseases/ healthy	0.272 (.104- .715)
	Arthritis / healthy	1.662 (.335- .8.247)**
	Tumors and cancers/ healthy	0.952 (.828- 1.094)*

** = more Significant , * = less Significant at 5% probability level

The (Table 4) shows the probability of some diseases occurred of the people with excessive eating red meat. It noticed the high of odds ratio with urinary system diseases, arthritis and diabetes, also shows the high of odds ratio with hypertension. The less odds ratio was digestive problems and tumors.

RESULTS AND DISCUSSION

The results showed most of the samples preferred red meat in spite of their knowledge the benefits of white meat. In addition, they preferred the fresh meat, although sometimes do not conform the specifications. The results showed the high prices of fresh Iraqi meat, whether white or red meat while, frozen or processed meat was suitable price, which lead to increased consumption furthermore it is easy to store and cook **(Chen *et al.,* 2013)**. Occasionally the consumer resort to the frozen and processed meat, which is treated to look acceptable and delicious as it, is added chemicals to prolong the shelf life. The freezing process effect on the nutritional value and acceptability of meat taste. The favorites this type of meat for of the modern housing and the lack of wide spaces in modern housing. Industrial foods contain many preservative and flavoring chemicals, which are still studied and analyzed. Perhaps the world has been rid of the plague, smallpox and other diseases that were killing people, but appeared a new generation of pathological conditions imposed by modern life, like all types of cancers, obesity, immune and psychological diseases and more **(Micha *et al.,* 2010)**.

It is noteworthy, some livestock exposed to antibiotics or vaccines, then slaughtered and marketed without taking the withdrawal period, and this causes many health problems such as antibiotic resistance, which loses the therapeutic activity of the drug **(Al-mashhadany 2019)**.

In this study, the odds ratio value (OR) has been estimated with 95 % confidence level intervals (CIs) for some variables. For example, persons who eat red meat have just a higher risk of chronic disease versus people who eat white meat. This suggests that eating more white meat and less red meat is linked to a lower risk of arthritis, urinary tract, hypertension, and gastrointestinal diseases. **(Sabri 2013; Hayley *et al.,* 2015; Glanz, *et al.,* 2018).**

A lot of controversy has been about the health risks of excessive consumption of meat, especially red meat, and the results of this study showed that red meat, especially processed

meat, is a risk factor for functional and tumorigenic diseases (**Alabbody et al., 2017**). Some indicators can be observed in previous studies in this regard, such as the high consumption of red meat in girls, which may have a role in the high level of female hormones that lead to early puberty and increase the risk of future exposure to tumors such as breast tumors (**Al-Abbody et al., 2018**). There is an indication that carnivores are more susceptible to tumors, while herbivores are less susceptible to tumors (**Alabbody 2019**). Therefore, from these two indicators that excessive consumption of meat causes serious health problems. Previous studies indicated eating moderate amounts of meat or replacing it with dairy or vegetable protein found in crops such as beans and lentils to get the body's need for protein (**Alabbody et al., 2017; Alabboody 2021; Abdulwahid et al., 2021**).

CONCLUSION

As the economists and agrarians say "Agriculture and livestock are the permanent oil". Iraq has two great rivers running from north to south, and fertile soil, all of which contribute to classifying the country as a productive agricultural power that meets its needs and allows it to export abroad, but the country has been subjected to confusion and weak policies. , and lack of awareness and planning for decades. With more awareness, society may change its eating habits for the better. Because the Iraqi market is unable to meet the food needs due to the weak local production, it is forced to depend on imports. As a result, we advocate reducing imports as much as possible and focusing on developing farm-to-table livestock production that brings significant gains to the economy and health of all.

REFERENCES

1. Abdulwahid, M.T., Alabbody, H.H.K. & Rashid, H.A. (2021). Effect of silymarin supplement on ISA brown layers feds aflatoxin contaminated feed on egg quality and histopathology of liver, spleen. *Online Journal of Veterinary Research*, 25(9), 653-659.
2. Alabbody, H.K. (2018). Bovine leukosis and the possibility to cause cancer in humans: A scientific review. *The Iraqi Journal of Veterinary Medicine*, 42(1), 52-60.
3. Alabbody, H.K. (2021). A comparative study of the consumers attitude on the meat hygiene slaughtered in and outside the slaughter houses. *Iraqi Journal of Market Research and Consumer Protection*, 13(1), 77-84.
4. Alabbody, H.K., Al-Nasiry, B.S. & Kadhim, K.H. (2018). Applying food frequency questionnaire to evaluate the dietary pattern and life style on women with breast cancer. *Journal of The Faculty Medicine of Baghdad*. 60(2), 119-125.
5. Alabbody, H.K. (2019). Mammary tumor in mammals and the risk factors: comparative clinical pathological study. *Journal of Biodiversity and Environmental Sciences*, 14(5), 83-92.
6. Alabbody, H.K., Alwan, M.J.K., Zenad, M.M. & Abduljaleel, A.W.(2017). Clinical and histopathological study on Dog's tumors in Iraq. *Iraqi Journal of Science*, 58(3C), 1617-1630.
7. Alabbody H.K., Alwan, N.A., Attoof, W.M. & Beden, B.R. (2017). Evaluation of Women's knowledge about risk factors and early detection of breast cancer at Ibn Rushd college of education in Baghdad university. *Iraqi National Journal of Nursing Specialties*, 30(1), 119-125.
8. Alabbody, H.K. (2021). A comparative study of the consumers attitude on the meat hygiene slaughtered in and outside slaughter houses. *Iraqi Journal of Market Research and Consumer Protection*, 13(1), 77-84.

9. Al-Hayali, A.A. & Abdul-Majeed, H.H. (2019).The strategic weight of meat production and table eggs in Diyala province in Iraqi food security. *Journal of Research Diyala humanity*, 82(1), 14-40.

10. Al-mashhadany, D.A. (2019). Detection of antibiotic residues among raw beef in Erbil City (Iraq) and impact of temperature on antibiotic remains. *Italian Journal of Food Safety*, 8(1), 6-10.

11. Chen, G., Lv, D., Pang, Z. & Liu, Q. (2013). Red and processed meat consumption and risk of stroke: a meta-analysis of prospective cohort studies. *European Journal of Clinical Nutrition*, 67, 91-95.

12. Dagevos, H. (2014). Flexibility in the frequency of meat consumption Empirical evidence from the Netherlands. *EuroChoices*, 13, 40-45.

13. Franca, M., Giovanni C. & Claudio C. (2015). Role of poultry meat in a balanced diet aimed at maintaining health and wellbeing: an Italian consensus document. Food and Nutrition Research, 59(1), 1-12.

14. Glanz, K., Rimer, B.K. & Viswanath, K. (2008). *Health Behavior and Health Education: Theory, Research, and Practice*. John Wiley & Sons: Hoboken, USA.

15. Hayley, A., Zinkiewicz, L. & Hardiman, K. (2015). Values, attitudes and frequency of meat consumption. Predicting meat-reduced diet in Australians. *Appetite*, 84(1), 98-106.

16. Liesbeth, T., Stefanie, M.V., Christine, V., Inge, H., Leo, G. & Herman, O. (2011). Average daily nitrate and nitrite intake in the Belgian population older than 15 years. *Food Additives and Contaminants*, 28(9), 1193-1204.

17. Micha, R., Wallace, S.K. & Mozaffarian, D. (2010). Red and processed meat consumption and risk of incident coronary heart disease, stroke, and diabetes mellitus a systematic review and meta-analysis. *Circulation*, 121, 2271-2283.

18. Sabri, H.M. (2013). The effect of random import of red meat on production and consumption Iraqi red meat, A prospective study. *Journal of Market Research and Consumer Protection*,7(2), 112-135.

19. William, L. (1999). N-Nitroso compounds in the diet. *Mutation Research*, 443, 129-138.

20. Wu, J.P., Wang, Z.P. & Yang, H.S. (2016). Education data collection, data quality analysis and data preprocessing research. *Journal of Ningbo Education Institute*, 6, 62-65.