RESEARCH ARTICLE Asian Journal of Dairy and Food Research, Volume 44 Issue 6: 1029-1036 (December 2025)

Assessment of Willingness to Pay Extra for Safe Meat and Meat Products Sold in Different Regions of Al-Suwaria City in Iraq's Wasit Governorate

Manal Hadi Ghaffoori Kanaan[1], Zena Kassem Khalil[2], Ahmad M. Tarek[3]

10.18805/ajdfr.DRF-524

ABSTRACT

Background: Food safety is a subject of significant concern for consumers since it directly impacts their health. High demand for safe food makes people willing to pay more. This study sought to determine customers' willingness to pay (WTP) for safe meat and meat products in Al-Suwaria city in Iraq's Wasit governorate.

Methods: From October to February 2024, 315 customers participated in cross-sectional research. A questionnaire was used to collect data on their sociodemographic characteristics and safe meat perceptions. We used SAS to determine how different variables affected the research parameters.

Result: The majority of customers favored certified fresh local veterinary-supervised red meat (31.75%). Monthly household income substantially impacts meat intake (p=0.0318). Consumers' availability perception had a greater proportion of favorable perception of 66.66%, showing more attention about these features. There was a positive correlation between the WTP for safe meat and family income. This research advises meat producers, entrepreneurs and farmers to include quality control measures in their production and marketing plans to fulfill customer demand for safer meat.

Key words: Consumers' perceptions, Meat consumption, Meat safety, Wasit province, WTP.

INTRODUCTION

Humans have evolved to consume meat, which is high in protein and biological value (Font-i-Furnols, 2023). Due to rapid urbanization, population expansion and wealth development in emerging nations, worldwide per capita meat consumption has quadrupled since 1961 (Ritchie and Roser, 2017). By 2030, OECD and FAO forecast a 14% increase in meat consumption. The growing global population boosts meat consumption (Kanaan, 2024b). From 1991 to 2013, meat consumption in Iraq increased (Hasan *et al*., 2019). However, since 2014, the area's economic turmoil due to declining oil prices and the battle against ISIS slowed growth (FAO, 2018). The crisis cut household income and buying power (Abdalla *et al*., 2023). After 2014 terrorist attacks in numerous Iraqi governorates, many families fled to Wasit governorate. Food demand, especially meat, rises (Kanaan *et al*., 2023). However, this relocation has increased poverty and economic inequality, which may impair consumer behavior and health (Kanaan *et al*., 2023). The conditions in which animals are raised and processed promote spoilage and harmful bacteria and increase the likelihood of microbiological contamination (Kanaan and Tarek, 2022). Health dangers, chemical pollution and toxic substances in animal and poultry feed have also raised concerns about meat quality, especially in poor nations (Hu *et al*., 2017; Henchion *et al*., 2019; Cavalheiro *et al*., 2020). These toxic elements have the potential to biomagnify in food chains, leading to life-threatening health problems as a long-term consequence of consuming unsafe meat (Zhong *et al*., 2020). There have been reports of meat contamination in Iraq with several pathogens (Kanaan, 2018, 2023). Safe slaughter and meat safety methods are unclear in our country (Kanaan, 2021, 2023, 2024a). However, consumers' food safety ignorance contributes to this problem (Kanaan and Tarek, 2020; Kanaan *et al*., 2022).

Food safety is defined by freshness, animal welfare, lean/fat and pricing (Verbeke and Liu, 2014; Krishnasree *et al*., 2018). Safe meat is grown on antibiotic-free, biosecure feed without harmful elements supplemented with herbs, growth-promoting drugs, or withdrawal periods

[1]Department of Nursing, Technical Institute of Suwaria, Middle Technical University, Baghdad, Iraq.
[2]Department of Optometry, Medical Technical Institute Al-Mansor, Middle Technical University, Baghdad/Iraq.
[3]Department of Crime Evidence, Institute of Medical Technology Al-Mansour, Middle Technical University, Baghdad, Iraq.

Corresponding Author: Manal Hadi Ghaffoori Kanaan, Department of Nursing, Technical Institute of Suwaria, Middle Technical University, Baghdad, Iraq. Email: dr.manalhadi@mtu.edu.iq
ORCIDs: 0000-0002-9409-4778, 0000-0002-1254-9442, 0000-0001-8752-9043

How to cite this article: Kanaan, M.H.G., Khalil, Z.K. and Tarek, A.M. (2025). Assessment of Willingness to Pay Extra for Safe Meat and Meat Products Sold in Different Regions of Al-Suwaria City in Iraq's Wasit Governorate. *Asian Journal of Dairy and Food Research*. **44(6):** 1029-1036. doi: 10.18805/ajdfr.DRF-524.

Submitted: 15-03-2025 **Accepted:** 14-05-2025 **Online:** 16-06-2025

(Saha *et al*., 2022). However, particular criteria are defined and safe food prices are expected to rise (Mai *et al*., 2023).

However, much existing literature on consumer behavior toward safe or organic foods implies such importance (Bryant *et al*., 2019; Li and Kallas, 2021; Kantor and Kantor, 2021; Jayanthi *et al*., 2021; Patil *et al*., 2024). Song and Lee (2018) suggest using WTP to set a socially acceptable threshold. Unfortunately, Iraq has yet to execute this safe meat plan despite eliciting comprehensive public preferences. Our study analyzes how consumers perceive safe meat across attributes. It also measures meat consumption and customers' desire to eat healthier meat. Lastly, the investigation focused on consumers' willingness to pay for safe meat and meat products.

MATERIALS AND METHODS

From October to February 2024, the research was conducted at the Technical Institute of Suwaria in Al-Suwaria city. A cross-sectional study involving 315 customers examined their willingness to pay extra for safe meat. Al-Suwaira, 35 km south of Baghdad, lies in Wasit Governorate. The population is 77,200. Unfortunately, following the events of 2014, a significant number of families from other governorates relocated to this city after losing their homes (Kanaan *et al*., 2023). This resulted in worsening poverty and poor living conditions, potentially decreasing consumers' desire to purchase expensive and healthy meat. The sample size was estimated using Cochran's method (Khan *et al*., 2016). The sample size was calculated at 315 using a conservative proportion estimate of 50% and a 5% margin of error with 95% confidence. Study participants were selected *via* systematic random selection. Data collectors first visited popular markets, butcher shops and retail establishments. Researchers lottery-enrolled 350 customers from indicated locations. 35 samples were rejected to participate owing to lack of interest (n=13), inability to grasp research value (n=9) and missing paragraphs (n=11); they withdrew. Two participants were canceled for not answering questions. This research had a 90% response rate (315/350). When asked, data collectors explained self-administered surveys.

Using prior studies (Saha *et al*., 2022; Mishu *et al*., 2024), a questionnaire on WTP more for safe meat was created. The questionnaire begins with the study's aim, voluntariness and completion time. Seven experts with at least five years of experience reviewed the questionnaire for clarity, relevance and appropriateness to assess the early instrument's content validity. The scale was shown as the mean item CVI (S-CVI/AVE). Each item had a content validity index (I-CVI). Items with an I-CVI greater than 0.7 were kept, while those between 0.5 and 0.7 were revised and explained. Items with I-CVI < 0.5 were discarded. Inter-rater agreement was strong across items, with I-CVIs ranging from 0.71 to 1.0 and S-CVI/AVE at 0.87. The questionnaire examined participants' demographic information. Consumer views on safe retail meat's health, environment, price, availability and meat suppliers were asked. On a 5-point Likert scale, 18 response items were graded: strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1), ranging from 18 to 90 scores. Good results were 50% or higher than the maximum perception ratings. We also assessed the participants' desire to purchase safe meat and their WTP the extra price by income group. The Statistical Analysis System (SAS, 2018) program was used to detect the effect of different factors in study parameters. The chi-square test was used to significantly compare between percentages (0.05 and 0.01 probability). In this study, the least significant difference (LSD) test was used to significantly compare between means.

RESULTS AND DISCUSSION

Demographic information of the participants

Table 1 presents the distribution of the participants' demographic characteristics. More than half of the respondents were male, but only a third of them were young and preferred fresh, local, veterinary-supervised red meat. Statistically, there are significant differences ($P \leq 0.01$) in the distribution of samples according to demographic information, except for the type of consumed meat ($P=0.955$). Our results indicated that most respondents are economically engaged (under 50), which may affect their purchases and attitudes regarding safe meat. Despite prior results in Iraq and the world indicating that customers favor poultry meat (Chen and Antonelli, 2020; Neima *et al*., 2021) for its health benefits, our results showed that most of the respondents preferred fresh, local, veterinary-supervised red meat. However, consumer preference for fresh, verified meat was a positive signal.

However, in Iraq, due to the high pricing of such foods, many households buy cheaper meat butchered without veterinary oversight, which may compromise its safety and represent a health risk. Our study suggests that consumers' preference for wet markets stems from the relatively lower meat prices compared to supermarkets. This finding is in line with Vietnam results (Mai *et al*., 2023). Married people, especially those with children, may value food safety and quality more. The gender gap in our study may reflect Iraqi culture, where males make most household purchases. Consider this demographic element when examining data since it may impair universal applicability.

Consumers' perceptions of the safety of retailed meat

Table 2 summarized the respondents' perceptions about safe retail meat. Only 38.89% of the participants showed a positive perception about the safe retail meat (Fig 1). In addition to that, our results indicated that availability perception had the highest percentage of positive perception (above the mean) at 66.66% (Fig 2). Statistically, there are significant differences ($P \leq 0.01$) in the responses to perception questions among different sample groups (Table 2). Consumers purchase goods depending on their viewpoint. Most respondents felt traditional meat was

Table 1: Distribution of sample study according to demographic information.

Demographic information		Number	Per cent %	P-value
Gender	Male	193	61.27	
	Female	122	38.73	0.0001**
	Total	315	100%	
Age Groups	25-29 years	114	36.19	
	30 – 45 years	79	25.08	0.0001**
	46-49 years	58	18.41	
	>50 years	64	20.32	
	Total	315	100%	
Qualifications	Uneducated	36	11.43	
	Primary	53	16.83	
	Secondary	64	20.32	0.0001**
	Diploma	83	26.35	
	Bachelor	59	18.73	
	Master	20	6.35	
	Total	315	100%	
Type of meat and meat products	Red meat	158	50.16	0.955^{NS}
	Poultry meat	157	49.84	
	Total	315	100%	
Origin of meat	Fresh local veterinary-supervised red meat	100	31.75	
	Fresh local red meat without veterinary supervision	34	10.79	
	Certified frozen imported red meat	26	8.25	
	Fresh local veterinary-supervised poultry meat	66	20.95	
	Fresh local poultry meat without veterinary supervision	58	18.41	0.0001**
	Certified frozen local poultry meat	26	8.25	
	Certified frozen imported poultry meat	5	1.59	
	Total	315	100%	
The type of market you buy meat from	Wet markets	166	52.7	
	Supermarkets	105	33.33	0.0001**
	Animal breeder	25	7.94	
	Others	19	6.03	
	Total	315	100%	
Marital status	Married	223	70.8	
	Unmarried	87	27.62	0.0001**
	Widowed or divorced	5	1.59	
	Total	315	100%	
Market location	Rural	71	22.54	0.0001**
	Urban	244	77.46	
	Total	315	100%	
Family members	4	104	33.02	
	5-7	122	38.73	0.0001**
	Above 8	89	28.25	
	Total	315	100%	

Table 1: Continue...

Table 1: Continue...

Purchaser of meat	Respondent	92	29.21	
	Respondent and partner	185	58.73	0.0001**
	Others	38	12.06	
	Total	315	100%	
Monthly income	Below 500,000 IQD	148	46.98	
	750-1000,000 IQD	106	33.65	0.0001**
	Above 1500,000 IQD	61	19.37	
	Total	315	100%	

** (P≤0.01), NS: Non-significant.

Table 2: Perception of consumers about the safety of retailed meat.

Concepts	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	P-value
Health	Conventional meat is unhealthy	149 (47.3)	56 (17.78)	54 (17.14)	46 (14.60)	10 (3.17)	0.0001**
	Feed contains heavy metals	43 (13.65)	25 (7.94)	165 (52.38)	50 (15.87)	32 (10.16)	0.0001**
	Animal agriculture uses several harmful substances	218 (69.2)	49 (15.56)	44 (13.97)	3 (0.95)	1 (0.32)	0.0001**
	Consuming healthy meat reduces health risks	203 (64.44)	56 (17.78)	56 (17.78)	0 (0)	0 (0)	0.0001**
	Animal farming harms the environment and people	39 (12.38)	24 (7.62)	157 (49.84)	26 (8.25)	69 (21.91)	0.0001**
Environment	Meat heavy metals damage the environment	56 (17.78)	23 (7.30)	214 (67.94)	7 (2.22)	15 (4.76)	0.0001**
	Safe meat is eco-friendly to create	139 (44.13)	87 (27.62)	69 (21.91)	20 (6.35)	0 (0)	0.0001**
	Safe animal production sustains taste and nutrition	75 (23.81)	34 (10.79)	116 (36.83)	90 (28.57)	0 (0)	0.0001**
	Safe meat taste better than normal meat	0 (0)	12 (3.81)	195 (61.9)	93 (29.52)	15 (4.76)	0.0001**
	Safe meat will be worth more	51 (16.19)	173 (54.92)	47 (14.92)	21 (6.67)	23 (7.30)	0.0001**
	Safe meat is too expensive	0 (0)	24 (7.62)	135 (42.86)	95 (30.16)	61 (19.37)	0.0001**
Expensiveness	Safe meat is just for the privileged	31 (9.48)	45 (14.29)	164 (52.06)	13 (4.13)	62 (19.68)	0.0001**
	Do safe meat cost more?	145 (46.03)	73 (23.18)	80 (25.47)	17 (5.47)	0 (0)	0.0001**
	Do you want safer, healthier meat?	214 (67.94)	80 (25.47)	21 (6.67)	0 (0)	0 (0)	0.0001**
Availability	Does your town markets sell safe meat?	24 (7.62)	38 (12.06)	137 (43.49)	57 (18.15)	59 (18.73)	0.0001**
	Stores should sell safe meat	225 (71.43)	65 (20.64)	25 (7.94)	0 (0)	0 (0)	0.0001**
	Local meat is safer	10 (3.17)	30 (9.52)	135 (42.86)	95 (30.16)	27 (8.57)	0.0001**
Sources of meat	Imported meat is safer	0 (0)	0 (0)	15 (4.76)	194 (61.59)	106 (33.65)	0.0001**

** (P≤0.01).

unhealthy and included heavy metals, pesticides and growth hormones. The results match Malaysian and Romanian ones (Ahmad and Juhdi, 2010; Petrescu and Petrescu-Mag, 2015). Consumer environmental perception scored the lowest, with just 33.33% above the mean (Fig 2). The results contradict previous findings by Zagata (2012), Gracia and De-Magistris (2016) and Mai *et al*. (2023) that consumers have strong environmental perception. Consumer opinions may vary across studies due to differences in food safety knowledge and the influence of animal husbandry on the environment and public health. The respondents' expensiveness impression had the lowest mean score, with just 33.33% above the mean (Fig 2). Previous research revealed consumers expect safe food prices to rise (Hjelmar, 2011). With 66.66%, respondents' availability impression scored best (Fig 2), which is inconsistent with Chang and Zepeda (2005) and Saha *et al*. (2022), who showed lower customer perception of safe food availability. Different dietary habits among different countries and consumers may account for the differences across studies.

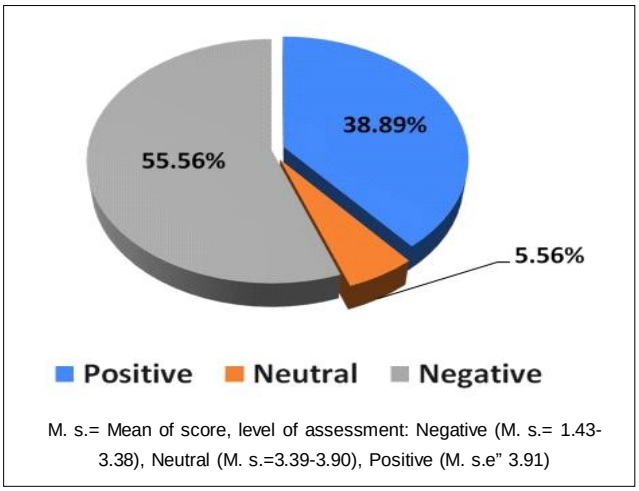


Fig 1: Overall perceptions of the respondents.

Meat consumption and WTP extra price by various income groups

A positive association was observed between family income and monthly meat consumption, as the monthly mean consumption increases with the increase in family income (Table 3). Statistically, monthly family income significantly affects (P≤0.05) monthly meat consumption (p=0.0318). Our findings indicated that the studied families consume an average of 2 to 23.7 kg of meat each month. The positive and substantial influence of household income on meat consumption supports economic theory that greater incomes allow consumers to buy more expensive food (Vecchio and Annunziata, 2015). Despite their high price, 80.63% of respondents from families with incomes up to 1,000,000 IQD chose red meat. This contradicts previous findings from Bangladesh (Saha *et al*., 2022).

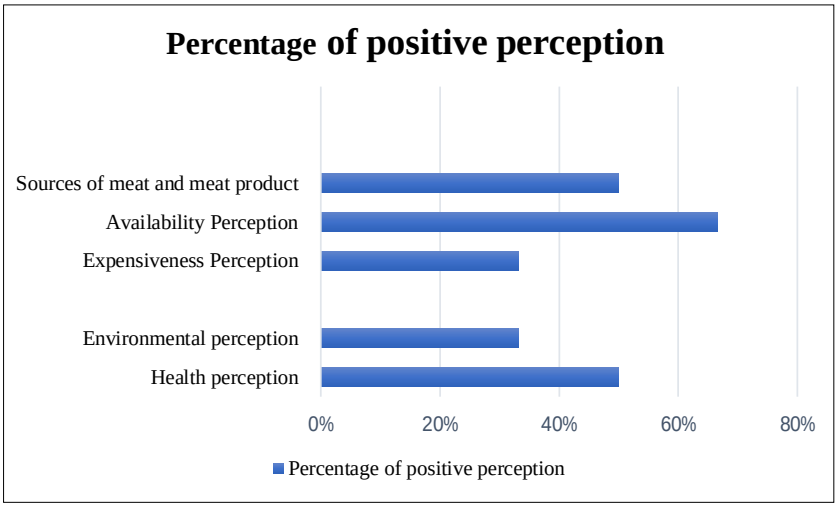


Fig 2: Percentage of positive perception among different aspects.

Table 3: Percentage of meat consumption and willingness to pay extra for safe meat across different income groups.

Income group IQD/ month	Percentages	Willingness to pay extra price n/N (%)	Monthly consumption (mean)
Below 500,000 IQD	148 (46.98)	56/148 (37.84)	13.57
750,00-1000,000 IQD	106 (33.65)	85/106 (80.19)	15.17
Above 1000,000 IQD	61 (19.37)	52/61 (85.25)	18.15
Overall mean consumption	315 (100)		15.63
P-value	0.0001 **	0.0061 **	0.0318 *

* (P≤0.05), ** (P≤0.01)

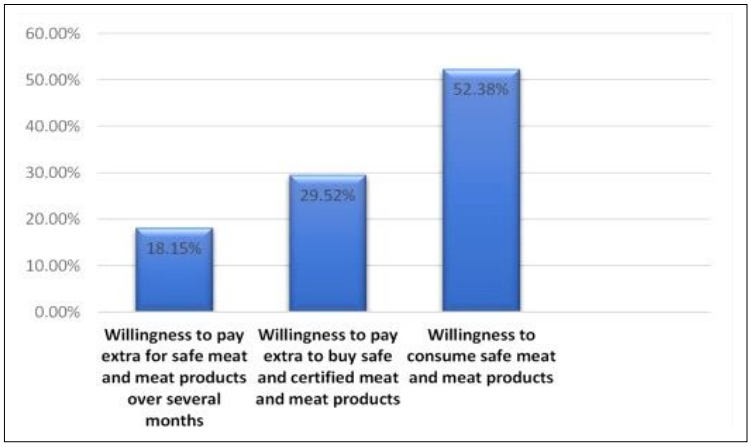


Fig 3: Consumers' desire to buy safe meat.

Our results (Fig 3) showed that 29.52% of respondents displayed their desire to pay extra to buy safe meat, while 18.15% displayed their desire to pay extra for safe meat over several months. The results showed a positive correlation between the family income and the desire to pay an extra price for safe meat among different income groups (Table 3). Statistically, there are significant differences (P≤0.01) in the responses of samples among different income groups (Table 3).

Unfortunately, our results indicate that customers ignored meat safety hazards (Fig 3). Our results were lower than prior results (Saha *et al*., 2022). Moreover, due to its benefits, people are prepared to pay more for safe meat. Previous research has identified similar consumer demand behavior (Önel *et al*., 2019; Kantor, 2021; Walaszczyk *et al*., 2023 and Ebata *et al*., 2025). The study found a disparity in consumers' health and environmental perspectives, which may harm the environment and public health.

CONCLUSION

Consumers often stigmatize meat due to its exposure to harmful substances during its raising. However, higher-quality items will have greater production costs, which will raise prices. This study found that customers had moderate to low health and environmental views, showing that they are less worried about meat safety's effects on these elements. The desire to spend more on safe meat positively correlates with income categories. This study highlights Iraq's potential benefits from strong meat inspection and certification procedures. Food safety, customer trust and public health might increase greatly with such methods. Our findings help authorities create guidelines to encourage safe meat purchases. WTP may be studied for other foods' believability attributes. They may also examine several aspects affecting premium food clients' WTP.

ACKNOWLEDGEMENT

This study did not get any funding or grants.

Disclaimers

The views and conclusions expressed in this article are solely those of the authors and do not necessarily represent the views of their affiliated institutions. The authors are responsible for the accuracy and completeness of the information provided but do not accept any liability for any direct or indirect losses resulting from using this content.

Informed consent

The Middle Technical University Ethics Committee approved this project (MEC No. 88). The Helsinki Declaration of 1975 principles guided this acceptance. After obtaining all essential information, research participants were invited to write to confirm their participation.

Conflict of interest

The authors claim no conflicts of interest in publishing this work. No funding or support affected study design, data collection, analysis, publication decision, or article writing.

REFERENCES

Abdalla, N.R., Bavorova, M., Gruener, S. (2023). Meat consumption in transition: The case of crisis region of Iraqi Kurdistan. *Journal of International Food and Agribusiness Marketing.* **35(1):** 45-65.

Ahmad, S.N.B. and Juhdi, N. (2010). Organic food: A study on demographic characteristics and factors influencing purchase intentions among consumers in Klang Valley, Malaysia. *International Journal of Business and Management.* **5(2):** 105.

Bryant, C., Szejda, K., Parekh, N., Deshpande, V., Tse, B. (2019). A survey of consumer perceptions of plant-based and clean meat in the USA, India and China. Front. sustain. *Frontiers in Sustainable Food Systems*. **3(1):** 432863.

Cavalheiro, C.P., da Silva, M.C.A., Leite, J.S.F., da Silva Felix, S.K.R., Herrero, A.M., Ruiz-Capillas, C. (2020). Physical hazards in meat products: Consumers' complaints found on a Brazilian website. *Food Control*. **108:** 106892.

Chang, H. S. and Zepeda, L. (2005). Consumer perceptions and demand for organic food in Australia: Focus group discussions. *Renewable Agriculture and Food Systems*. **20(3):** 155-167.

Chen, P. J. and Antonelli, M. (2020). Conceptual models of food choice: Influential factors related to foods, individual differences and society. *Foods*. **9(12):** 1898.

Ebata, A., Espinoza, M., Ton, G. (2025). Food safety certification in urban food markets: the willingness to pay for safer meat in Peru. *Food Security*. pp. 1-16.

FAO/WFP. (2018). Monitoring Food Security in Countries with Conflict Situations. Issue 3. World Food Programme. Rome.

Font-i-Furnols, M. (2023). Meat consumption, sustainability and alternatives: An overview of motives and barriers. *Foods*. **12(11):** 2144.

Gracia, A. and De-Magistris, T. (2016). Consumer preferences for food labeling: what ranks first? *Food Control*. **61:** 39-46.

Hasan, K., Neima, H., Ismael, K., Harun, R., Salih, C.H. (2019). Consumers perception of canned agri-food products in Sulaymanyah City, Kurdistan Regional Government Iraq. *Pro Environment*. **12:** 251-256.

Henchion, M., McCarthy, M., Dillon, E.J., Greehy, G., McCarthy, S.N. (2019). Big issues for a small technology: Consumer trade-offs in acceptance of nanotechnology in food. Innovative *Food Science and Emerging Technologies*. **58(3):** 102210.

Hjelmar, U. (2011). Consumers' purchase of organic food products. A matter of convenience and reflexive practices. *Appetite*. **56(2):** 336-344.

Hu, B., Jia, X., Hu, J., Xu, D., Xia, F., Li, Y. (2017). Assessment of heavy metal pollution and health risks in the soil-plant-human system in the Yangtze River Delta, China. *International Journal of Environmental Research and Public Health*. **14(9):** 1042.

Jayanthi, D., Senthilkumar, P., Muralidharan, J., Sureshkumar, S. (2021). Meat and fat quality of salem black goat meat reared under different rearing systems. *Indian Journal of Animal Research*. **55(5):** 588-596. doi: 10.18805/ijar.B-3979.

Kanaan, M.H. (2018). Antibacterial effect of ozonated water against methicillin-resistant *Staphylococcus aureus* contaminating chicken meat in Wasit Province, Iraq. *Veterinary World*. **11(10):** 1445.

Kanaan, M.H. (2023). Prevalence and antimicrobial resistance of Salmonella enterica serovars *Enteritidis* and *Typhimurium* isolated from retail chicken meat in Wasit markets, Iraq. *Veterinary World*. **16(3):** 455.

Kanaan, M.H. (2024a). Effect of biofilm formation in a hostile oxidative stress environment on the survival of Campylobacter jejuni recovered from poultry in Iraqi markets. *Veterinary World*. **17(1):** 136.

Kanaan, M.H., Salim, I.D., Tarek, A.M., Abdullah, S.S. (2023). Knowledge, attitude and hygiene practices of food handlers related to food safety in Al-Suwaira City, Wasit Province in Iraq. *International Journal of One Health*. **9(2):** 150-58.

Kanaan, M.H.G. (2024b). Effectiveness of gaseous ozone on Arcobacter butzleri and bacterial loads on retailed meat sold at Iraqi Wasit markets. *Open Veterinary Journal*. **14(11):** 2794.

Kanaan, M.H.G. and Tarek, A.M. (2020). Clostridium botulinum, A FOODBORNE PATHOGEN AND ITS IMPACT ON PUBLIC HEALTH. *Annals of Tropical Medicine and Public Health*. **23:** 49-62.

Kanaan, M.H.G. and Tarek, A.M. (2022). Innovative modern bio-preservation module of meat by lytic bacteriophages against emergent contaminants. *Open Veterinary Journal*. **12(6):** 1018-1026.

Kanaan, M.H.G., Al-Isawi, A.J.O., Mohamme, F.A. (2022). Antimicrobial resistance and antibiogram of thermotolerant Campylobacter recovered from poultry meat in Baghdad markets, Iraq. *Archives of Razi Institute*. **77(1):** 231-237.

Kanaan, MH. (2021). Prevalence, resistance to antimicrobials and antibiotypes of Arcobacter species recovered from retail meat in Wasit marketplaces in Iraq. *International Journal of One Health*. **7(1):** 142-150.

Kantor, B.N. and Kantor, J. (2021). Public attitudes and willingness to pay for cultured meat: A cross-sectional experimental study. Front. Sustain. *Frontiers in Sustainable Food Systems*. **5:** 594650.

Kantor, J. (2021). Willingness to pay for surgical treatments for basal cell carcinoma: A population-based cross-sectional study. *Dermatologic Surgery*. **47(4):** 467-472.

Khan, M.U., Hassali, M.A., Ahmad, A., Elkalmi, R.M., Zaidi, S.T., Dhingra, S. (2016). Perceptions and practices of community pharmacists towards antimicrobial stewardship in the state of Selangor, Malaysia. *PLoS one*. **11(2):** e0149623.

Krishnasree, V., Nethra, P.V., Dheeksha, J., Madumitha, M.S., Vidyaeswari, R., Lakshya, P. (2018). A pilot study on assessing the sustainability of food safety and hygienic practices in street food handling system. *Asian Journal of Dairy and Food Research*. **37(4):** 321-325. doi: 10.18805/ajdfr.DR-1359.

Li, S. and Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. *Appetite*. **163:** 105239.

Mai, D.Q., Pham, T.P., Dang, T.H., Chau, T.L., Nguyen, H.T. (2023). Consumers' willingness to pay for pork safety in the Southeast region of Vietnam. *In IOP Conference Series: Earth and Environmental Science*. **1155(1):** 012026.

Mishu, M.A., Saha, S.M., Prodhan, M.M.H., Rahman, M.M., Khan, M.A. (2024). Willingness to pay for certification and labeling of chicken meat in the Mymensingh District of Bangladesh. *Journal of Advanced Veterinary and Animal Research*. **11(3):** 772.

Neima, H.A., Sirwan, K., Hameed, K. (2021). Consumers choice and preference for chicken meat in Sulaymaniyah. *IOP Conference Series: Earth and Environmental Science*. **910(1):** 012028.

Önel, G., Seidu, A., Seale Jr, J.L. (2019). Consumer demand for organic food groups and implications for farmers' revenues under the organic land subsidy scheme: The case of Denmark. *Journal of Food Distribution Research*. **50(2):** 47-68.

Patil, R.A., Bhavana, A., Patil, B.R. (2024). Cultured meat: The upcoming meat production having sustainable benefits over conventional meat production: A review. *Agricultural Reviews*. **45(1):** 82-88. doi: 10.18805/ag.R-2333.

Petrescu, D.C. and Petrescu-Mag, R.M. (2015). Organic food perception: Fad, or healthy and environmentally friendly? A case on Romanian consumers. *Sustainability*. **7(9):** 12017-12031.

Ritchie, H. and Roser, M. (2017). Meat and dairy production. Our world in data. Retrieved from https://ourworldindata.org/meat-production.

Saha, S.M., Prodhan, M.M.H., Rahman, M.S., Haque, A.M., Iffah, K., Khan, M.A. (2022). Willingness to pay for safe chicken meat in Bangladesh: A contingent valuation approach. *Journal of Food Quality*. **1:** 3262245.

SAS. (2018). Statistical Analysis System, User's Guide. Statistical. Version 9.6th ed. SAS. Inst. Inc. Cary. N.C. USA.

Song, H.J. and Lee, E.K. (2018). Evaluation of willingness to pay per quality-adjusted life year for a cure: A contingent valuation method using a scenario-based survey. *Medicine*. **97(38):** e12453.

Vecchio, R. and Annunziata, A. (2015). Willingness-to-pay for sustainability-labelled chocolate: An experimental auction approach. *Journal of Cleaner Production*. **86:** 335-342.

Verbeke, W. and Liu, R. (2014). The impacts of information about the risks and benefits of pork consumption on Chinese consumers' perceptions towards and intention to eat, pork. *Meat Science*. **4:** 766-772.

Walaszczyk, A., Kowalska, A., Staniec, I. (2023). A survey on willingness-to-pay for food quality and safety cues on packaging of meat: A case of poland. *Decision*. **50(2):** 233-249.

Zagata, L. (2012). Consumers' beliefs and behavioural intentions towards organic food. *Evidence from the Czech Republic. Appetite*. **59(1):** 81-89.

Zhong, V.W., Van Horn, L., Greenland, P., Carnethon, M.R., Ning, H., Wilkins, J.T., Lloyd-Jones, D.M., Allen, N.B. (2020). Associations of processed meat, unprocessed red meat, poultry, or fish intake with incident cardiovascular disease and all-cause mortality. *JAMA Internal Medicine*. **180(4):** 503-512.