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Relationships Between Mixed Feed Production and The Amount of Broiler Meat Consumed Per Person

ABSTRACT

Objective: The objective of this article is to examine data related to the broiler chicken sector in Turkey between 1996 and 2022 and to evaluate the relationship between per capita chicken meat consumption, compound feed production, feed costs, and the number of animals slaughtered. The study aims to reveal the effect of increased broiler chicken production on per capita consumption by analyzing the relationships between these parameters.

Materials and Methods: The study is based on data from 1996 to 2022 obtained from the Ministry of Agriculture and Forestry of the Republic of Turkey and the Turkish Statistical Institute (TÜİK). The data include compound feed production (tons), feed costs (TL per ton), number of animals slaughtered, and per capita chicken meat consumption (kg). The data were modeled and analyzed using quadratic regression analysis in the SPSS 22.0 software package. The statistical model used is: $Y = \mu + 5.753E\text{-}6X_1 - 4.372E\text{-}13X_2^2$. This model explains the relationship between compound feed production and other parameters.

Results: The analyses revealed a significant relationship between compound feed production and per capita chicken meat consumption ($p < 0.005$, $R^2 = 0.96$). As compound feed production increases, per capita chicken meat consumption also increases; however, when production peaks at around 6 million tons, the increase in consumption slows relatively (20-25 kg/person in 2021-2022). In 1995, compound feed production was 1,046,602 tons, while in 2022 it reached 6,131,807 tons (a 5.8-fold increase); feed costs rose from 38 TL/ton to 14,695 TL/ton (a 386-fold increase); the number of animals slaughtered increased from 99,087. 900 to 261,250,314 (a 2.6-fold increase); per capita consumption rose from 8.64 kg to 22.875 kg (a 2.6-fold increase). The increase in exports in recent years (268,000 tons in 2011, 628,000 tons in 2021) is the main reason for the slowdown in domestic consumption. Other factors affecting consumption include income distribution, household size, gender, education level, and price sensitivity.

Conclusion: The study shows that the increase in compound feed production directly increases chicken meat production and indirectly increases per capita consumption. However, chicken meat consumption in Turkey, which was 22.875 kg per capita in 2022, is well below the World Health Organization's recommended animal protein intake target (approximately 54 kg per year). Increased exports are limiting domestic consumption. To increase animal protein intake, compound feed production and slaughtering capacities should be increased, and hatchery and breeding facilities should be developed. This will both support healthy nutrition and contribute to employment and the national economy.

Keywords: Broiler, broiler meat consumption per capita, feed, number of slaughtered animals, feed price

Karma Yem Üretimi ile Kisi Bası Tüketilen Tavuk Eti Arasındaki İliskiler

ÖZ

Amaç: Makalenin amacı, 1996-2022 yılları arasında Türkiye'deki etlik piliç sektörüne ilişkin verileri inceleyerek kişi başına piliç eti tüketiminin, karma yem üretimi, yem maliyetleri ve kesilen hayvan sayıları ile ilişkisini değerlendirmektir. Çalışma, bu parametreler arasındaki ilişkileri analiz ederek, etlik piliç üretiminin artmasının kişi başına tüketim üzerindeki etkisini ortaya koymayı hedeflemektedir.

Materyal ve Method: Çalışma, T.C. Tarım ve Orman Bakanlığı ile Türkiye İstatistik Kurumu'ndan (TÜİK) elde edilen 1996-2022 yıllarına ait verilere dayanmaktadır. Veriler; karma yem üretimi (ton), yem maliyetleri (ton başına TL), kesilen hayvan sayısı ve kişi başına piliç eti tüketimi (kg) içermektedir. Veriler, SPSS 22.0 paket programında kuadratik regresyon analizi ile modellenmiş ve analiz edilmiştir. Kullanılan istatistiksel model: $Y = \mu + 5{,}753E\text{-}6X_1 - 4{,}372E\text{-}13X_2^2$. Bu model, karma yem üretimi ile diğer parametreler arasındaki ilişkiyi açıklamaktadır.

Bulgular: Analizler, karma yem üretimi ile kişi başına piliç eti tüketimi arasında anlamlı bir ilişki olduğunu göstermiştir ($p < 0.005$, $R^2 = 0.96$). Karma yem üretimi arttıkça kişi başına piliç eti tüketimi de artmaktadır; ancak, üretim 6 milyon ton civarında zirve yaptığında, tüketim artışı relatif olarak yavaşlamaktadır (2021-2022'de 20-25 kg/kişi). 1995'te karma yem üretimi 1.046.602 ton iken, 2022'de 6.131.807 tona ulaşmış (5,8 kat artış); yem maliyetleri 38 TL/tondan 14.695 TL/tona (386 kat artış); kesilen hayvan sayısı 99.087.900'den 261.250.314'e (2,6 kat artış); kişi başına tüketim ise 8,64 kg'dan 22,875 kg'a (2,6 kat artış) yükselmiştir. Son yıllarda ihracattaki artış (2011'de 268 bin ton, 2021'de 628 bin ton), iç tüketimdeki yavaşlamanın ana nedenidir. Tüketimi etkileyen diğer faktörler arasında gelir dağılımı, hane büyüklüğü, cinsiyet, eğitim seviyesi ve fiyat hassasiyeti yer almaktadır.

Sonuç: Çalışma, karma yem üretimindeki artışın doğrudan piliç eti üretimini ve dolaylı olarak kişi başına tüketimi artırdığını ortaya koymaktadır. Ancak, Türkiye'de 2022'de kişi başına 22,875 kg olan piliç eti tüketimi, Dünya Sağlık Örgütü'nün önerdiği hayvansal protein alım hedefinin (yıllık ~54 kg) oldukça altındadır. İhracatın artması, iç tüketimi sınırlamaktadır. Kesilen hayvan sayısını artırmak için karma yem üretimi ve kesim kapasiteleri artırılmalı, kuluçka ve yetiştirme tesisleri geliştirilmiştir. Bu, hem sağlıklı beslenmeyi destekler hem de istihdam ve ulusal ekonomiye katkı sağlar.

Anahtar Kelime: Etlik piliç, kişi başı tavuk eti tüketimi, karma yem, kesilen hayvan sayısı, karma yem fiyatı

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INTRODUCTION

The poultry meat sector has serious positive effects on the national economy by providing people with cheap animal protein sources, large employment capacity, import and marketing of feed additives, hatchery and slaughterhouse activities and utilization of slaughterhouse residues. Although the poultry meat sector in our country is dependent on foreign countries for animal material, domestic hybrid studies are being carried out in ministries and institutes. These studies are expected to yield positive results in a short period of time and may be a good domestic alternative as animal material in the future. The history of the poultry meat sector in our country until the 1960s was always obtained by raising domestic chickens or chicks of imported combined fertile animals in the hands of citizens and slaughtering them by slaughterers. The first modern hybrid broiler breeding animals were imported to Turkey in 1968 through private sector companies and the Turkish people were introduced to modern broiler chickens after that time. The first company to import broiler chicks to Turkey in the 1970s was YU-PI and its owner Hanri Benazus. YU-PI company, which initially supplied local chicks named ERBRO from Erbeyli Research Institute, later imported foreign origin breeder chicks used in broiler production in the world and introduced the first broiler chick to Turkey. Although many other poultry companies established later on initially started to buy chicks from YU-PI, later almost all of them imported their own breeder chicks and started to develop their integrated activities (Şengör 2024). In the aforementioned 1970s, chicken meat consumption in the world was 3.9 kg/person/year, while in Turkey it was 2.9 kg/person/year (FAO, 2018). Another important organization in the history of poultry in Turkey is the Development Foundation of Turkey (TKV). TKV is the most important building block for poultry farming in Turkey to become what it is today. It was established on January 13, 1969 in order to increase the income of small producers with limited opportunities in rural areas through agriculture, animal husbandry, forestry and agriculture-based business practices in their own environment, to contribute to the rural and agricultural development of our country by developing models suitable for the realities of the country. Within this framework, TKV has been active in sectors such as poultry, cattle breeding, beekeeping, handicrafts, etc. Among these, it was the application in poultry farming that became industrialized. TKV established KÖY-TÜR Holding A.Ş. in 1985 with the idea that small farmers should also take part in the management of these industrialized activities. Thus, the efficient and effective working style of small producers specific to rural areas was brought together with the known management and technological possibilities of large organizations. A brand new “production, business and marketing” model emerged. This “unique economy” model, which was created by integrating labor and capital into a single sector instead of separate sectors, was born in 1969 and its birthplace was Turkey. Under KÖY-TÜR, broiler production was carried out in an integrated system. The product was produced and offered to the market under healthy conditions at every stage from the beginning of production until it was purchased by the consumer. In other words, the production in those years was identical to the production in today's conditions. The chicks required for KÖY-TÜR main breeding enterprises were supplied every year from large main breeding enterprises (pure line) located abroad. It was one of the dreams of KÖY-TÜR to have one of the large main breeding enterprises, which are as few as the fingers of one hand in the world. KÖY-TÜR realized this dream by purchasing the Danish Scanbrid large mother breeding enterprise in 1992 (Bütün Dünya-January.1999-Başkent University Publications). The continuity of genetic breeding studies in large parent breeding enterprises is essential. These studies were also being carried out in KÖY-TÜR. However, unfortunately, this breed could not maintain its competitiveness against other competitors later on and disappeared. In the second half of the 1980s, one out of every three chickens produced in Turkey carried the KÖY-TÜR brand, which was produced as a TKV model. Unfortunately, KÖY-TÜR, which suffered due to the economic crises that emerged later, entered a downsizing process as of 2001 by disposing of its assets one by one and eventually had to withdraw from the sector completely by not being able to cope with the crises. After KÖY-TÜR, developments in the sector continued at a very high speed. The companies that invested in the sector continued the modernization process by investing all their earnings back into this sector. Today's success lies largely in this working model. Today, the poultry sector in Turkey uses the world's most modern technologies to supply healthy chicken meat to the Turkish people and fulfills its duty to provide healthy nutrition to new generations in the cheapest way (Şengör 2024).

The compound feed sector in Turkey has undergone a significant transformation in parallel with the modernization of animal husbandry and the development of agricultural policies (Tümer, 2018). The development in Turkey can be examined in five different periods. The early Republican period (1923-1950) was a period when the Turkish economy was largely based on agriculture and animal husbandry was carried out using

traditional methods. In the 1920s and 1930s, the state took steps to modernize agriculture and livestock farming; the Industrial Promotion Law was enacted in 1927, and various institutions were established to support agricultural production (Kocagöz, 2005). The sector's first steps (1950-1970) were a period when the livestock sector began to grow with the mechanization of agriculture and the spread of modern agricultural techniques. During this period, the first initiatives for compound feed production emerged, and with the private sector's involvement in feed production in 1964, the sector began to gain momentum (Feed Industry Association, 2015). The first feed factories were generally established through public-private partnerships. The enactment of Feed Law No. 1734 in 1973 was an important step in establishing industry standards and ensuring quality control (Resmi Gazete, 1973). During the period of sector growth and privatization (1970-1990), the state encouraged the private sector to increase compound feed production; new factories were established, and production capacity expanded (Gökalp, 1990). During the period of technological developments and globalization (1990-2000), automation systems became widespread in feed production, and efforts to comply with the European Feed Manufacturers' Federation (FEFAC) brought the Turkish feed sector closer to international standards (FEFAC, 2000). During the modernization and sustainability period (2000-present), the compound feed sector became more competitive through technological investments and R&D studies (Türker and Kocaman, 2020). University-industry collaboration projects played an important role in increasing the technological level of the sector. In 2004, feed definitions and standards were updated in line with the European Union acquis; the Regulation on the Marketing and Use of Feeds regulated the use of feed additives and premixes (Ministry of Agriculture and Forestry, 2004). In terms of production capacity, according to 2023 data, compound feed production in Turkey has reached approximately 27 million tons, and more than 500 feed companies are in operation (Turkish Feed Manufacturers Association, 2023).

Chicken meat is one of the most widely consumed protein sources worldwide and in Turkey, standing out for its affordability, accessibility, and versatility. Its affordability is one of its most important distinguishing features. Chicken meat has lower production costs compared to other protein sources such as beef, lamb, or pork. The main reasons for this include the short rearing periods of poultry (typically 5-6 weeks), high feed efficiency, and the productivity provided by modern poultry farming systems. Thanks to this economic advantage, chicken meat offers an affordable option for both individual consumers and the restaurant and ready-to-eat food sectors. It is particularly preferred as a budget-friendly protein source in low- and middle-income households. In Turkey, the poultry sector benefits from economies of scale and government incentives, keeping chicken meat prices at competitive levels. Additionally, the fact that different cuts of chicken meat (breast, wing, thigh) are offered at various price ranges makes it accessible to all income groups (Goddard E et al. 2017, FAO 2020, Özertan 2008). Another advantage of chicken consumption is that it is easily available everywhere, from supermarkets to local butchers, hypermarkets to small grocery stores, thanks to an extensive distribution network. The development of cold chain logistics has ensured that chicken can be transported over long distances without spoiling and is available throughout the year. In Turkey, the poultry sector is spread across the entire country with regional production facilities, ensuring equal access in both rural and urban areas. Additionally, the availability of chicken meat in frozen or fresh form offers consumers convenience. On a global scale, countries that export chicken meat (such as Brazil, the US, and Turkey) support the continuous availability of this product in international markets. Turkey's geographical location provides easy access to European, Middle Eastern, and Asian markets, creating an advantage in exports (USDA 2023, Keskin and Demirbaş 2016). Chicken meat processing is fast and easy. Compared to other types of meat, chicken meat requires less time and expertise in the cutting, cleaning, cutting, and cooking processes. Integrated production processes, ranging from modern poultry farms to automated slaughterhouses, enable chicken meat to be processed quickly. For example, the slaughtering and packaging process for a chicken is completed much more quickly than for beef. Additionally, the versatile nature of chicken meat makes it suitable for various cooking methods, such as grilling, baking, boiling, or frying. In the food industry, chicken meat is widely used in products like nuggets, döner, ready-to-eat meals, and fast food items. In Turkey, with the growth of the ready-to-eat food sector, processed forms of chicken meat (e.g., salami, sausage) have also become popular. This rapid processing feature saves time and costs in both home kitchens and industrial production (Smith 2014, Barbut 2015, Tuncer 2019). Chicken meat is also important in terms of nutritional value and health. Chicken meat is a rich source of high-quality protein, low fat content, and essential nutrients such as vitamin B12, niacin, and selenium. Especially chicken breast, with its low-calorie and fat-free composition, is an ideal choice for dieters, athletes, and health-conscious consumers. Chicken meat supports muscle development, strengthens the immune system, and contributes to energy metabolism. When

consumed without the skin, it has a low risk of negatively affecting cholesterol levels. In Turkey, with increasing health awareness, chicken meat consumption is on the rise, especially as an alternative to red meat. Additionally, chicken meat is easy to digest and appeals to a wide age group, from children to the elderly (Marangoni et al. 2015, WHO 2018, Çınar and Çelik 2020). Chicken meat production is advantageous in terms of environmental and sustainability aspects. Compared to red meat production, chicken meat production requires fewer environmental resources (water, feed, land) and produces lower greenhouse gas emissions. The feed conversion ratio (FCR) of poultry is high; that is, less feed is used to produce one kilogram of meat. For example, while 6-10 kg of feed is required for beef production, this ratio is around 1.5-2 kg for chicken meat. Additionally, chicken farming requires less land use and has a lower water footprint. In Turkey, efforts to increase feed crop production and integrated production models are enhancing the sustainability of chicken meat production. Globally, chicken meat stands out as a more environmentally friendly protein source in the fight against climate change (FAO 2013, Steinfeld et al. 2006, anonymous 2022).

Chicken meat consumption is also a culturally and socially accepted food in our country. Chicken meat is widely accepted by society due to its compliance with religious and cultural restrictions. Its compliance with halal and kosher standards in Muslim and Jewish communities makes chicken meat a popular choice in these societies. In Turkey, chicken meat has a wide range of uses, from traditional dishes to modern recipes (e.g., chicken döner, grilled chicken, served with rice). Additionally, chicken meat can be easily adapted to different culinary cultures; it can be prepared with various spices and cooking techniques from Asia to Europe. This flexibility enables chicken meat to be widely used in both global and local cuisines. In Turkey, increasing urbanization and changing eating habits have further increased the popularity of chicken meat (Mintel 2021, Aksoy 2017). For a healthy life, foods should be consumed in the required amount and regularly (Şengül; Zeybek, 2020). It is very important to consume animal food sources in a balanced diet (Bircan; Eleroğlu, 2019). It is recommended that 1 in 3 of the amount of protein that should be taken daily for a balanced diet should be of animal origin. This protein need should be met from red meat (large and small head) and poultry meat (poultry and fish meat). Chicken meat has low fat content and high protein content (Stamatopoulou and Tzimitra-Kalogianni, 2022). Chicken meat has an important place in human life due to its easy availability.

In Turkey, children, pregnant and lactating women, and the elderly are the leading groups affected by malnutrition. In adults, chronic diseases such as obesity, hypertension, cardiovascular diseases, diabetes and cancer are the majority. In order to have an adequate and balanced diet, it is necessary to maintain body weight appropriate for height, to consume less saturated fat, to reduce daily cholesterol intake, to reduce sugar and salt consumption, to consume vegetables, fruits, legumes, whole grain products, milk and dairy products and poultry meat products more frequently (Baysal, 2007). When chicken meat, which has an important place in healthy nutrition recommendations, is evaluated in terms of nutrients, it provides lower energy, is a good quality protein source and contains less fat and saturated fat (Table 1) (Cance Widdowson 1998). Energy and Nutrient Content of Raw Chicken Meat / 100 g There are many factors affecting the consumption of chicken meat, which has an important place in our nutrition in our country (Table 1). Regional development differences, consumer income level, socioeconomic and demographic characteristics, individual tastes and habits, product price and food safety factors affect consumer preferences (Aral et al. 2011).

Table 1. Nutritional value of poultry meat (Cance Widdowson 1998).
Tablo 1. Kanatlı etinin besin değeri (Cance Widdowson 1998).

	Chicken Breast Meat	Chicken Thigh Meat	Meat With Skin
Energy (kcal)	116	126	230
Protein (g)	21,8	19,1	17,6
Fat (g)	3,2	5,5	17,7
Sodium (mg)	72	89	70
Potassium (mg)	330	300	260
Calcium (mg)	10	11	10
Iron (mg)	27	22	20
Copper (mg)	0,5	0,9	0,7
Copper (mg)	0,14	0,25	0,16
Zinc (mg)	0,7	1,6	1,0
Vitamin B6 (mg)	0,53	0,30	0,30
Folic acid	8	12	7
Biotin (mcg)	2	3	2
Pantoneic acid (mg)	1,2	1,3	0,9
Thiamine (mg)	1,10	0,11	0,08
Riboflavin (mg)	0,10	0,22	0,14

In Turkey, the broiler meat sector employs 600,000 people, including raw material producer farmers, tradesmen related to the sector, feed, medicine-vaccine, sub-industry, transportation and marketing, and provides the livelihood of approximately 3 million people with their families. The sector has achieved an increase in production, consumption and especially exports with a turnover of 5.5 billion dollars as of 2024 (Besd-Bir 2024). The purpose of this article is to reveal the effect of per capita broiler consumption by evaluating data related to the broiler industry from 1996 to the present. To this end, the relationships between feed production, feed costs, the number of animals slaughtered, and per capita chicken consumption data have been examined.

MATERIAL and METHODS

This study was conducted by evaluating the data of the Ministry of Agriculture and Rural Affairs and TÜİK. The data includes the total amount of compound feed produced, compound feed cost, number of animals slaughtered and broiler meat consumed per capita for broiler chickens from 1996 to 2024.

Table 2. Poultry meat data (Ministry of Agriculture and Forestry and TUIK)

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Years	Broiler Chicken Feed (Ton)	Feed Prices (Ton TL)	Number Of Animals Slaughtered	Broiler Meat Consumption Per Person Kg
1996	1046602	38	99 073 900	8,64
1997	1093620	73	104 870 702	9,47
1998	1150694	102	167 275 380	9,37
1999	1532056	143	167 862 730	9,77
2000	1912270	173	193 459 280	11,05
2001	1503561	305	161 899 442	9,6
2002	1645791	413	188 637 066	9,98
2003	1845421	486	217 133 076	12,12
2004	2131884	548	238 101 895	12,16
2005	2127088	489	257 221 440	15,03
2006	2026069	495	286 121 360	14,42
2007	2471075	590	205 082 159	15,23
2008	2886165	708	180 915 558	16,94
2009	2967431	740	163 468 942	17,4
2010	3593576	770	163 984 725	17,5
2011	4031302	920	158 916 608	18,03
2012	4224111	970	169 034 283	18,79
2013	4083687	1160	177 432 745	18,94
2014	3979945	1260	199 976 150	19,54
2015	4779916	1210	213 658 294	20,29
2016	4566237	1190	220 322 081	20,01
2017	4753989	1380	221 245 322	21,73
2018	5306118	1790	229 506 689	20,89
2019	5363209	2080	221 841 860	20,47
2020	5397526	2720	258 046 340	20,5
2021	5542974	4540	270 393 122	20,68
2022	6022932	10070	251 289 799	21,95
2023	5829005	12730	254 147 577	22,21
2024	6131807	16960	261 183 314	22,85

In this study, data were analyzed with SPSS 2024 package program. The relationships between broiler compound feed (tons), compound feed price (dollar), number of slaughtered animals (number of animals) and poultry meat consumption (per capita /kg) in Turkey over the years (1996-2024) were examined by quadratic regression analysis. As a statistical model

Y: μ+5,753E-6X1--4,372E-13X22 used.

in order to explains the relationship between feed production (tons) and chicken meat consumption (kg), chicken meat consumption (Y) was taken as the dependent variable and feed production (tons) (X) as the independent variable.

RESULTS and DISCUSSION

In this study, the available data were statistically evaluated and a significant relationship was found between compound feed production and poultry meat consumption per capita ($p<0.005$). The established model explains the effect of poultry meat consumption on compound feed production well (R2: 0.96). As compound feed production increases, the amount of poultry meat consumed per capita also increases. However, this increase tends to decrease relatively when compound feed production, which peaked at 6 million tons in Turkey, is considered together with per capita poultry meat consumption (20-25 per capita consumption/kg) (Table 3). This decreasing trend approximately coincides with the 2020s. While compound feed production and per capita consumption of chicken meat increased linearly over the years (1996-2020), this increase has developed negatively in recent years. The most important reason for this is the increase in broiler meat exports in recent years. In this way, the meat of the broilers fed with compound feed produced can be explained by the fact that the remaining part of the exported part is consumed domestically. In other words, it is due to the decrease in the amount of broiler meat consumed domestically. Looking at the export figures, while it was 299 thousand tons in 2012, this figure increased approximately 2.3 times to 697 thousand tons (including broiler meet) in 2022 (Tuik, Besd-bir 2025).

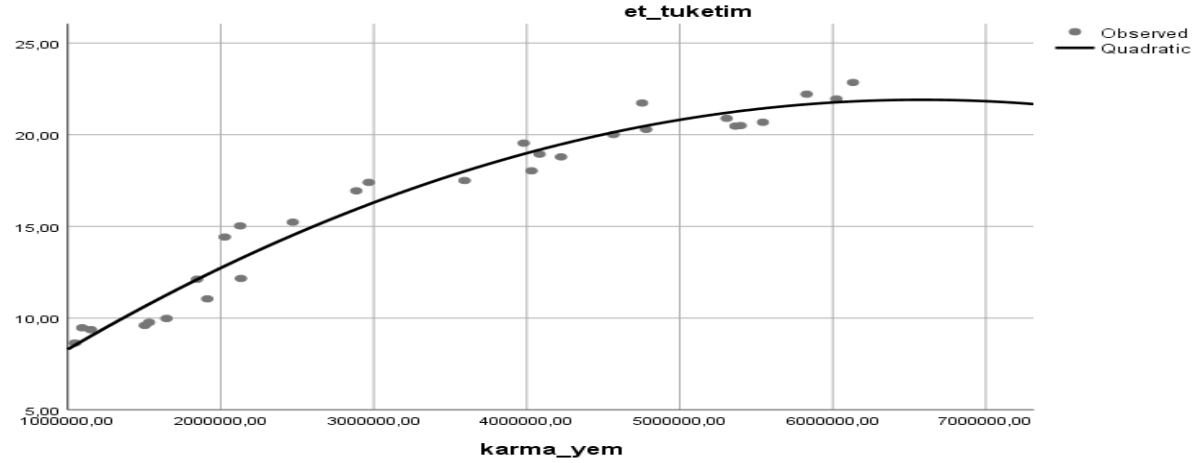

Figure 1. The relationship between compound feed production and per capita poultry meat consumption

Şekil 1. Bileşik yem üretimi ile kişi başına düşen kümes hayvanı eti tüketimi arasındaki ilişki

There are approaches that explain that there may be many reasons for the increase in poultry meat consumption. Karacan (2017) found that while red meat prices increased in Turkey for 2005-2015, demand increased in a similar manner. On the other hand, poultry meat consumption increased more in the same period. In this way, it is reported that if the amount of consumption increases while the price of a good increases, and if the consumption of substitute goods increases at the same time, this situation may be related to income distribution. Uzundumlu et al. (2011) reported that as the income of households increases, both red and poultry meat consumption increases, females are more effective in both red and poultry meat consumption than males, households owning a house increases red meat consumption, while households renting increases poultry meat consumption. As age increases, households' red meat consumption decreases while poultry meat consumption increases. The higher the education level of households, the lower the consumption of poultry and red meat. As the number of individuals increases, red meat consumption decreases while poultry meat consumption increases. When the occupation of the head of the family is a worker, red meat consumption of the household decreases, and when the occupation of the head of the family is a businessman, poultry meat consumption increases. These two studies show that although there are many factors affecting poultry meat consumption per capita, it should not be ignored that the increase in production has a very important share in the production. Akın et al. 2019 with university students, it was determined that 51.7% of the students had a monthly individual food expenditure of less than 250 TL. Again, the proportion of animal food expenditure amounts of 100 TL or less among the individual food expenditures of these students was found to be 59.1%. When the monthly poultry meat consumption rates of the students were analyzed, it was found that 5.8% did not consume poultry meat at all, 31% consumed less than 500 g, and 37.2% consumed between 500-999 g. The students who participated in

the survey reported that they consumed an average of 1.1 kg of poultry meat per month. Cevger ve ark. (2008) (2008) reported that 67.1% of the students spent less than 200 TL for individual monthly food consumption, the rate of those who never consumed red meat types was 4.1% for beef, 42.6% for mutton and 92.6% for goat meat, and the rate of those who consumed 1 kg or more of poultry meat per month was 60.6% for chicken meat, 10.7% for fish meat, and 2.4% for turkey and other poultry meat. In a study conducted by Demir and Aydın (2018) on students, it was determined that 5.8% of the students did not consume chicken meat, 4.7% did not consume eggs, and 18.9% did not consume fish meat at all. On the other hand, the annual per capita chicken meat consumption of the students was 19.6 kg/year, and it was emphasized that the students preferred breast, thigh and wing as the first three in terms of consumption preferences. As a similar result, the average of Turkey in 2018 is 20.89 kg/year per capita. Topçu (2014) divided consumers into 3 groups in his study conducted in Erzurum province. He emphasized that in the group with high poultry meat consumption frequency, there are willing and sensitive consumer segments based on both product image and price sensitivity, while those who consume poultry meat with medium frequency focus on the basic benefit of poultry meat considering sensory and real quality features and the concept that forms their diet under the risk of disease, while those in the group who consume less try to maximize their total benefits through generic branded products. Karakaya and İnci (2014), in their study conducted in Bingöl province, stated that 70% of the surveyed individuals prefer to consume chicken meat, while 30% of them prefer to consume red meat. The individuals who participated in the survey reported that 89% of them bought chicken meat from well-known brands and packaged, while 11% bought unbranded and unpackaged chicken meat. Sayılı (2006) found that avian influenza affected the amount of chicken meat consumption of consumers (42.86%), whereas some producers (57.14%) were not affected by avian influenza. While the price of the product, the name/brand of the company producing the product, the packaging status of the product, weight, appearance, being a village product and color were important, the freshness of the product and being able to trust the product in terms of health were found to be very important. More than half of the families surveyed thought that the disease would not affect people. Therefore, they did not change their consumption even during the illness period. On the other hand, 42.86% of the consumers reported that they reduced their consumption due to the disease. Tümer et al. (2016) found that the ratio of chicken meat expenditure in total food expenditures was 6.01% and the ratio in total meat expenditures was 25.70%. In the study area, the average monthly household consumption of chicken meat was 3.19 kg, red meat 2.12 kg and fish meat 1.35 kg. They emphasized that the most important factors affecting chicken meat consumption are household income, number of individuals in the family and gender of the consumer.

When the data in the study are examined, all values increase steadily over the years (Table 2). For example, while the amount of compound feed produced in 1996 was 1046602 tons, it was 6131807 tons in 2024, exactly 5.8 times more. Considering the costs, while the cost of 1 ton of feed was 38 TL in 1996, it increased to 16960 TL in 2024, 447.7 times more. When the number of animals slaughtered is analyzed, while 99 073 900 animals were slaughtered in 1996, this figure was 261 183 314 in 2024 and exactly 2.6 times more animals were slaughtered. In fact, the amount of poultry meat consumed per capita (kg), which is the most important issue concerning the consumer, increased from 8.64 in 1996 to 22.85 in 2024 and a positive increase of 2.6 times was achieved. When these data are analyzed, the increases in the number of animals slaughtered and the amount of poultry meat consumed per capita are similar. This should be taken into consideration when evaluating agricultural policies on a national basis. These values mean that the effect of the increase in the number of animals slaughtered on the increase in the amount of poultry meat consumed per capita can be achieved by increasing the number of animals slaughtered in the first place when aiming to increase per capita consumption. Poultry meat consumption is extremely important for human nutrition and these values should be targeted upwards. According to World Health Organization (WHO) data, a healthy person should consume 1 gram of protein per kilogram of body weight per day and 42% of this should be of animal origin (Gürer, 2021). The average weight of men and women in the 35-44 age range in Turkey is reported to be 75.7 kg (TUIK 2025). With an average calculation, a daily intake of 31.7 g of animal protein is recommended for a person weighing 75.7 kg. According to this calculation, considering that 31.7 g of protein can be met with poultry meat, it corresponds to 144 g of poultry meat (protein ratio in poultry meat is 22-24%). When we translate these results into annual poultry meat consumption, we get 52.5 kg. As a result, we see that the amount of poultry meat per capita in 2024 is 22.85 kg, well below the target. Even if we consider that even half of the target is met with poultry meat, it comes out as 26.2 kg. When the price and health effects of poultry meat and other meats are evaluated, the target is expected to be much higher than 50%. In this case, it is extremely important to increase per capita consumption of poultry

meat. When we take this as a target, it is understood that the per capita consumption is directly proportional to the number of animals slaughtered and that the target can be reached more easily by increasing the number of animals slaughtered. In addition, when we think of animal protein sources for a healthy diet, we should not only think of broiler chicken meat or red meat, but also of animal products such as eggs, cheese and yogurt. However, when considering these sources, it should be kept in mind that the amount of protein they contain is lower than meat. Eggs, cheese and yogurt contain 12%, 16-20% and 3-4% protein, respectively. In order to increase the number of slaughtered animals, it is necessary to increase hatchery capacities and broiler houses at the same rate. As a result of these increases, it both provides employment and contributes positively to the national economy.

When the total meat consumption in the world is analyzed, it is seen that we are below both the world and European average in 2022. In the year in question, the world average is 64 kg, while the European average is 99 kg. While our country's total meat consumption in 2022 is 51 kg, poultry meat accounts for 41.1% with 21 kg (Our Word in data 2025). When the world poultry meat consumption is analyzed, it is understood that we are still behind the European averages. While the European average accounts for 26.2% of total meat consumption, per capita consumption is 26 kg. While world poultry meat consumption is 17 kg per capita, it accounts for 26.5% of total meat consumption. When comparing Europe and the world with our country in terms of the total amount of meat consumed, it is useful to consider the share of pork consumed. The world average pork consumption is 15 kg and accounts for 23.4% of the world's total pork consumption, while the European average is 35 kg and accounts for 35.3%. Portugal has the highest meat consumption. Total meat consumption per capita is 151 kg and the amount of poultry meat is 32 kg with 21.1%.

The top ten countries in world feed production in 2022 are China (261.424 million tons), USA (231,538), Brazil (80,094), India (44,059), Mexico (38,857), Spain (35,580), Russia (33,000), Turkey (25,300), Japan (24,797) and Germany (24,506). In total, these countries accounted for 65% of world feed production. Moreover, when combined, their feed production grew by 4.4%, outpacing the overall global growth of 2.3%. The poultry sector experienced a slight decline in laying feed tonnage (-1.4%), while broiler feed production increased (+2.3%). The broiler sector also benefited from increased demand for easy-to-cook proteins due to the closure of restaurants during the pandemic and as an affordable option in the face of rising prices of other meat proteins. The most significant increases in Asia-Pacific were in China and India (Alltech Outlook 2025).

CONCLUSIONS

Export and Domestic Consumption Balance: Although the increase in poultry meat exports is a positive economic development, it should be considered to redirect part of the production intended for export to meet domestic demand in order to increase consumption in the domestic market. This could particularly increase protein access for low-income groups.

Increasing Production Capacity: Considering that the increase in the number of animals slaughtered directly affects per capita consumption, increasing the capacity of hatcheries and broiler production facilities should be a strategic priority. This will support both employment and economic growth.

Consumer Education and Health Perception: The health benefits of poultry meat (high protein, low fat) and its price advantage can be more effectively highlighted through consumer education campaigns. Promoting reliable brand and packaging standards can increase consumer confidence.

Income Distribution and Access: Limited consumption among low-income groups can be supported through social assistance programs or subsidies to increase poultry meat consumption. Access to affordable protein sources should be facilitated, particularly targeting students and the young population.

Global Comparisons and Competition: Although Turkey ranks 8th in the world in compound feed production, it lags behind European and global averages in poultry meat consumption. To close this gap, policies that support demand growth in countries such as China and India (e.g., affordable protein demand) can be used as examples.

In conclusion, increasing poultry meat consumption in Turkey depends not only on production increases but also on a comprehensive approach that takes into account socioeconomic factors and consumer habits. Increases in compound feed production, growth in the number of animals slaughtered, and export-oriented

policies have supported the increase in consumption. However, to achieve the protein consumption targets recommended by the WHO and approach global averages, strategies that encourage domestic consumption should be prioritized. This will both improve public health and increase the economic contribution of the poultry meat sector.

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