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Važnost načina držanja kokoši pri izboru jaja za kupovinu i konzumaciju

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THE IMPORTANCE OF KEEPING THE LAYING HENS FOR THE SELECTION OF EGGS FOR PURCHASE AND CONSUMPTION

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SUMMARY

The aim of the study was to analyze how important the way in which the laying hens are reared is for the consumers when buying the eggs for consumption. The research was conducted on the territory of the three counties of the continental part of the Republic of Croatia by conducting a survey. Two hundred eighty people were interviewed, and 225 valid questionnaires were analyzed. More women (59.10%) than men (40.90%) took part in the survey. Most respondents were between 30 and 39 years of age, employed, and had a vocational high-school education. Most respondents had a monthly family income ranging between €265 and €665. Most frequently, the respondents purchased the eggs in a shopping center and ate them several times a week. A large number of respondents (201) believe that the type of hen rearing influenced the quality of eggs but were unwilling to spend more money to buy the eggs from the alternative rearing systems, which was reflected in a response that the price was the most important factor in their choice when buying the eggs. The results show that there is a need to educate the people about how the hens are kept for a consumer-egg production and to familiarize them with the Animal Welfare Act and basic egg-quality indicators.

Keywords: housing system, animal welfare, hens egg quality, survey, consumers

INTRODUCTION

Poultry production is an important branch of livestock farming in the Republic of Croatia. In recent decades, it has been recognized that it is important for consumers all over the world to have an information about the type of animal husbandry when buying the food. This information tells the consumer how the animal was raised, i.e. whether a producer has complied with the animal-welfare regulations. Many studies show the results of consumer awareness of the impact of chicken-farming systems on human health, animal welfare, product quality, and environmental protection (Grunert and Lavelle 1996; Bejaei et al., 2011; Cao et al, 2001; Chen et al., 2023). In their survey responses, the consumers stated that these aspects are becoming increasingly important to them when choosing a product (Grunert, 2005; Bonti Ankomah and Yiridoe, 2006). Therefore, the consumers are increasingly interested in buying the poultry products from the animals raised in an ecological (organic) production system or in another alternative system that respects the animal welfare (Bonti Ankomah and Yiridoe, 2006).

In 2001, the European Commission differentiated between four types of rearing systems for laying hens producing the table eggs. According to the provisions of the Animal Welfare Act (Official Gazette 135/06), the Regulation on the Minimum Standards for the Protection of Laying Hens (Official Gazette 77/10, 99/10, and 51/11), the Regulation on the Protection of Animals Kept for the Production Purposes (Official Gazette 44/10), and the Regulation on Market Standards for eggs (Official Gazette 90/2021), the hens kept for food production can be reared in four ways: an organic rearing, a free-range rearing, a barn rearing, and a battery rearing. This categorization was made to allow the producers to differentiate their products and make it easier for the consumers to

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choose when buying the eggs. In the Republic of Croatia, most laying hens for the production of table eggs are kept in cages (battery hens) (62.0%), barn hens (32.0%), and free-range hens (5.5%), while only 0.5% of them are kept organically (Ministry of Agriculture, 2023).

As animal welfare is very important and has an impact on both the producers and consumers of animal products, the aim of this study was to analyze the importance of a type of hen rearing when buying the consumer eggs.

MATERIALS AND METODS

Description of the sample and the methods used to analyse the survey data

The survey was conducted in the period from February to June 2021 in the three counties of the continental part of the Republic of Croatia (i.e., Vukovar-Syrmia, Osijek-Baranja, and Virovitica-Podravina County). The data were collected using a questionnaire consisting of nineteen questions divided into three groups. On an average, the survey lasted from five to seven minutes. Two hundred eighty people were interviewed, but 225 of them who completed questionnaires were involved in the analysis. The first part of the questionnaire contained the questions on the respondents' demographic characteristics (i.e., a number of household members and monthly income, gender, age, education level, and occupation). This was followed by a set of questions covering the intrinsic and extrinsic characteristics that may influence the consumers when purchasing the eggs. For this group of questions, the respondents had to tick an answer on the Likert scale. The answers were numbered from 1 to 5, whereby 1 signified that a respondent did not agree with the statement offered at all, 2 signified that he or she partially disagreed with it, 3 meant that he or she did not know the answer, 4 signified that he or she partially agreed with the statement offered, and 5 signified that he or she fully agreed with the statement offered.

Statistical analysis

The coding of the collected data was processed using the *Excel* software package. The data were analyzed in a variant containing the response frequencies and percentages of responses using the *SmartEDA* package (Putatunda et al., 2019) in the *R* programming environment (R Development Core Team, 2020). A graphical representation of the answers in the form of a Likert scale as well as the frequencies and percentages of the answers was carried out with the packages likert (Bryer, 2013) and psych (Revelle, 2013) in the *R* programming environment (R Development Core Team, 2020).

RESULTS AND DISCUSSION

Table 1 shows the sociodemographic characteristics of this study's respondents. The table shows that a total of 225 respondents of different age groups (from 18 to 60 years of age and above) participated in the study, 92 of whom (40.90%) were the males and 133 (59.10%) of whom were the females. The largest number of respondents, 59 of them (26.22%), belonged to a group aged 30 to 39 years of age. The smallest number of respondents was under the age of 18 (7 respondents, or 3.10%). Most respondents lived with one to three family members (45.78%), while only 9.78% of them had more than five family members. With regard to their occupations, most respondents, 68% of them, were the employees, followed by the retirees (8.89%), students (8.45%), and farmers (5.33%). A proportion of the unemployed amounted to 6.66%, and those who described themselves as "others" accounted for only 2.37%. In terms of a monthly income in a respondent family, the survey results show that most respondents (36%) came from families with a monthly income of €265 to €665. These data indicate that the respondents' ability to pay was very low and that the respondents would choose to buy the cage-free eggs precisely because of their monthly family income, as they were the cheapest on the market. Although a majority of respondents in the survey were younger (aged 30 to 39 years of age) and employed (68%), most of them had completed merely a secondary level of education, which explains their relatively low monthly income. As we have noted, this has affected their preferences when purchasing the table eggs. The results of a survey conducted by Bejaei et al. (2011) showed that the respondents with higher incomes consumed significantly fewer eggs originating from the caged hens and more eggs originating from the free-range than the respondents with the lower monthly incomes. Relawati et al. (2022) pointed out that the respondents' purchasing power had a major influence on the choice of eggs when shopping. If the respondents' purchasing power was higher, they were more willing to spend more money on the eggs from the alternative chicken-keeping systems. In a contrast to the previous researchers, Vecchio and Annunziata (2012) stated that Italian consumers with higher incomes were not willing to pay a higher price for free-range eggs. Trimania et al. (2022) found that women are more willing to pay more money for eggs from alternative hen farming systems than men. In addition, the authors point out that the age group of respondents between 24 and 30 years old is most willing to pay a higher price for eggs from alternative laying hen farming systems, which is not consistent with our results. in their study on preferences when buying eggs from different farming systems Cao et al. (2021) point out that it is important whether the buyer already has experience with buying and consuming eggs from alternative farming systems or not. A total of 3072 respondents aged 18 to +65 took part in the study. A larger proportion of respondents were women (85.84%) and a smaller proportion were men (14.16%). The aforementioned authors observed a behavior of customers in the segment to choose eggs from a certain type of farming depending on how much money they intended to spend on the current purchase. An interesting fact they observed in their study is that the respondents, regardless of their gender, would still buy more the more expensive eggs even if they had less money available.

Table 1. Sociodemographic characteristics of the respondents

Tablica 1. Sociodemografska obilježja ispitanika

Value / *Vrijednost*	**N**	**%**
Gender of the respondents / *Spol ispitanika*		
Male / *Muški*	92	40.90
Female / Ženski	133	59.10
Age of the respondents / *Dob ispitanika*		
<18 years / *< 18 godina*	7	3.10
19-29 years / *19 – 29 godina*	45	20.00
30-39 years / *30 – 39 godina*	59	26.22
40-49 years / *40 – 49 godina*	41	18.22
50-59 years / *50 – 59 godina*	47	20.89
60 years and more / *60 godina i više*	26	11.57
Number of members in the family / *Broj* **članova** *u obitelji*		
From 1 to 3 / O*d 1 do 3*	103	45.78
From 3 to 5 / *Od 3 do 5*	100	44.44
More than 5 / *Više od 5*	22	9.78
Occupation of the respondent / *Zanimanje ispitanika*		
Unemployed / *Nezaposleni*	15	6.66
Employed / *Zaposleni*	153	68.00
Pensioners / *Umirovljenici*	20	8.89
Farmers / *Poljoprivrednici*	12	5.33
Students / *Studenti*	19	8.45
Others / *Ostalo*	6	2.37
Monthly income / *Mjesečni dohodak*		
< €265	22	9.77
€265–€665	81	36.00
€665–€930	47	20.88
> €930	75	33.33

Figure 1 shows the educational level of respondents according to a gender structure. It can be seen that 16.03% of male respondents and 4.35% of female respondents had completed an elementary-school education. When it comes to a high-school education, however, 71.43% of males and 73.91% of females had it completed, while 16.54% of male respondents and 21.74% of female respondents had a higher education. Bejaei et al. (2011) found that the respondents' level of education had an influence on the selection of eggs at the time of purchase, because they were concerned about the animal welfare and were willing to pay a higher price provided that the hens had been kept in an alternative way and not in cages ($P < 0.05$). The authors also found that, as the respondents' educational level increased, the number of respondents selecting the cage-free eggs when shopping decreased. Yang (2018) also found that the Taiwanese consumers with a high level of education were willing to pay a higher price for the eggs if the hens had been kept in an alternative system. In their paper on the consumers' willingness to pay a higher price for the eggs for the sake of a better hen housing, Trimania et al. (2022) pointed out that a majority of customers who were willing to pay a higher price for the egg had a high level of education (41.17%). They also noted that these respondents had a better perception of what animal welfare means and why it affects the egg price. The assumption is that the level of respondents' education influences their choice when purchasing the eggs, implying that the educated people are more familiar with the animal-welfare regulations, but they also have a higher monthly income and can allocate more money to the purchase of eggs from the alternative production systems, which are more expensive when compared to the caged hens' eggs.

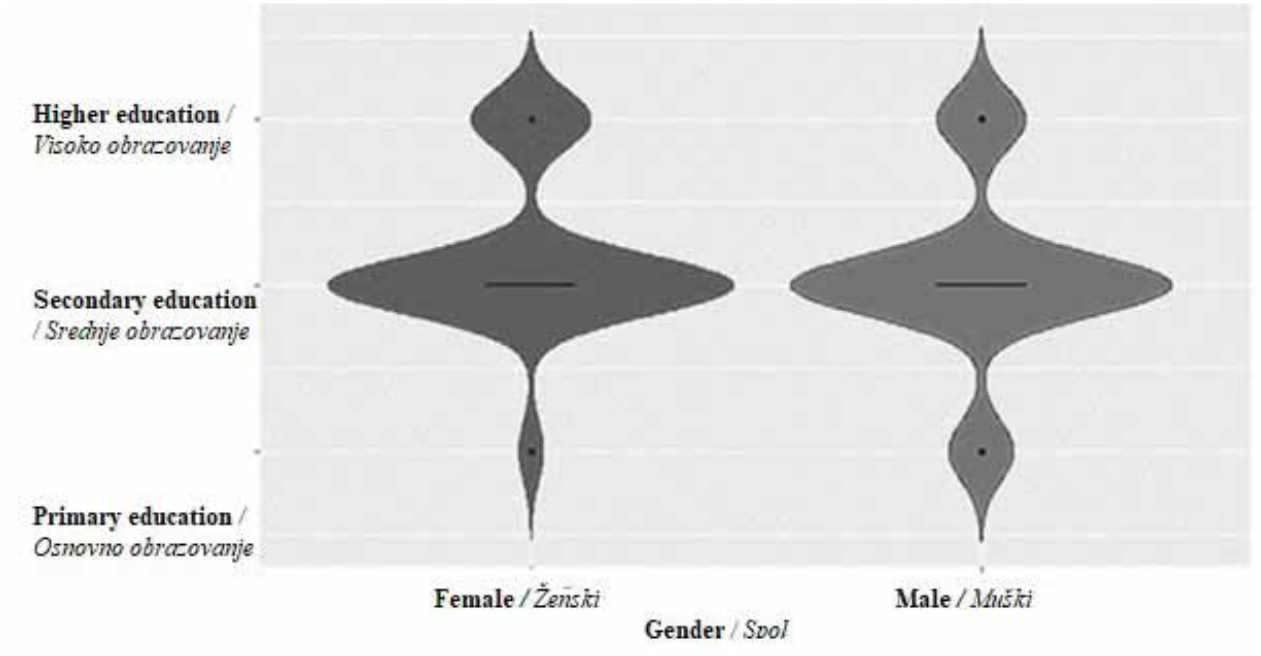


Figure 1. The respondents' educational level by gender
Grafikon 1. Razina obrazovanja ispitanika prema spolu

Table 2 shows the respondents' opinions about the purchase and consumption of eggs. The results show that a majority of respondents (49.78%) consumed the eggs several times a week, 28.0% of respondents consumed them once a week, 17.78% consumed them daily, and a very small percentage of respondents were those who ate the eggs once a month (4.44%). Most respondents, namely 57.58% of them, purchased the eggs in a shopping center, followed by shopping in a rural household, where 33.33% of respondents bought their eggs, and the smallest number of respondents bought the eggs at a marketplace (9.09%). A large proportion of respondents, 58.67% of them, bought the eggs for consumption, while 41.33% of respondents produced the eggs on their own farm. When asked from which farming system (production) they most frequently purchased or consumed the eggs, a majority of respondents stated that that were the free-range eggs (58.22%). A slightly fewer number of respondents (20.0%) stated that they bought the caged hens' (i.e., the battery hens') eggs hens), and a smaller percentage of them stated that they bought the barn (12.44%) or organic eggs (9.34%).

Table 2. The respondents' opinions about a purchase and consumption of eggs

Tablica 2. Mišljenje ispitanika o kupovni i konzumaciji jaja

Value / *Vrijednost*	**N**	**%**
How often do you consume chicken eggs? / *Koliko često konzumirate kokošja jaja?*		
Daily / *Svakodnevno*	40	17.78
Several times a week / *Više puta tjedno*	112	49.78
Once a week / *Jednom tjedno*	63	28.00
Once a month / *Jednom mjesečno*	10	4.44
Do you buy eggs for consumption? / *Kupujete li jaja za konzumaciju?*		
I am buying / *Kupujem*	132	58.67
Production on my own / *Proizvodnim sam*	93	41.33
If you buy the eggs, please circle where you buy them most often. / *Ako jaja kupujete, molimo zaokružite gdje ih najčešće kupujete.*		
At a marketplace / *Na tržnici*	12	9.09
Shopping centers / *Trgovački centri*	76	57.58
Rural households / *Seoska domaćinstva*	44	33.33
From which type of chicken farming do you most often buy and/or consume eggs? / *Najčešće kupujete i/ili konzumirate jaja podrijetlom iz kojeg načina držanja peradi?*		
The eggs from organic farming / *Jaja iz ekološkoga uzgoja*	21	9.34
Free-range eggs / *Jaja iz slobodnoga uzgoja*	131	58.22
The eggs from barn (floor) farming / *Jaja iz štalskog (podnog) uzgoja*	28	12.44
Eggs from cage (battery) breeding / *Jaja iz kaveznoga (baterijskog) uzgoja*	45	20.00
The choice of eggs I will buy and/or consume depends on? / *O* **čemu** *ovisi izbor jaja koja* **ću** *kupiti i/ili konzumirati?*		
Price / *Cijeni*	106	47.11
Poultry keeping method /*Načinu držanja peradi*	97	43.11
Brend (producer) / *Brendu (proizvođaču)*	17	7.56
Packaging / *Ambalaži*	5	2.22
Do you believe that the way in which poultry is reared has an influence on the quality of the eggs? / *Mislite li da način držanja peradi ima utjecaj na kvalitetu jaja?*		
Yes / *Da*	201	89.33
No / *Ne*	24	10.67

The respondents also indicated that a price (47.11%) had the greatest influence on their purchasing decision when buying the table eggs, followed by a hen-farming type (43.11%), a product brand (7.56%), and packaging (2.22), which had the least influence on a purchasing decision. Although the price is the most common criterion by which the respondents chose to buy the eggs, most respondents (89.33%) believe that a farming system had an influence on the egg quality.

Chen et al. (2023) state that of the total Chinese respondents (n=1317), the largest proportion (36.07%) consume 4 to 6 eggs per week, which would be consistent with our findings as most respondents in our study stated that they consume the eggs several times a week. The authors also stated that the respondents most frequently buy the eggs in supermarkets, which is also consistent with our results. Berkhoff et al. (2020) stated that a price is one of the most important factors influencing a decision of whether a customer would buy the eggs. These authors claimed that, in addition to the egg price, their size was also an important factor. In their study, Zakowska-Biemans and Tekien (2017) mentioned an egg price as an important factor when buying the eggs. However, these authors pointed out that a farming type is also an important customer-related factor when buying the eggs. The consumers' awareness of animal welfare has prompted the European Union (EU) to amend its animal-welfare regulations. The laws and regulations in the Republic of Croatia are harmonized therewith. Precisely because of these legislation amendments, the egg producers are increasingly investing in the production systems that take intoaccount the animal welfare and environmental protection. One of the first agricultural production sectors in which this sensitivity and production-system adaptation was manifested was the egg production. A transition to the alternative egg-production systems, free-range, and barn production had an impact on a decline in the number of hens in the Republic of Croatia, which fell from 3,584,000 in 2016 to 2,796,000 in 2019. In addition to the other economic factors affecting the product prices, these trends of switching from a cage (battery) farming to some of the alternative farming systems certainly had an impact on the formation of egg prices on the market. The alternative egg-producing housing systems fulfil the higher animal-welfare standards, but the production costs, on the other hand, are increasing, prompting the producers to sell their products at higher prices. Many studies (Zakowska-Biemans and Tekien, 2017, Rahmani et al. 2019) have shown that the consumers would be willing to pay a higher price for the organic or free-range eggs, and a market share of these eggs is still very high. In their study on the customers' willingness to pay more for the eggs from the

alternative laying-hen rearing systems, Cao et al. (2021) observed the repliers' responses and categorized them into two groups. The first group were the respondents who had no information about the animal welfare and the quality of products from the alternative chicken-farming systems, or who had not already bought and consumed these products. The second group consisted of the respondents who had all the information about the hen welfare and the quality of eggs from the alternative farming systems and who had already consumed the eggs produced in this way. The results show that the respondents who have already experienced buying and eating eggs from an alternative hen-rearing method are more willing to pay a higher price for the eggs than those who only buy the caged hens' eggs.

Table 3 shows the results concerning the question of whether a chicken-farming type had an influence on a stress, nutritional value, and the egg yolks' color. A majority of respondents, namely 68.89% of them, were of an opinion that the laying hens kept in cages were exposed to more stress than the ones kept in an alternative housing system. Partially in agreement with the aforementioned assumption were 11.11% of the respondents, 12.89% did not know the answer, 1.33% partially disagreed with it, while 5.78% did not agree with the aforementioned assumption at all.

Table 3. The respondents' opinions about the influence of a chicken-farming type on a stress, nutritional value, and egg yolks' color

Tablica 3. Mišljenje ispitanika o utjecaju načina držanja kokošiju na stres, nutritivnu vrijednost i boju žumanjka jaja

	N	%
Do the caged chickens live under more stress than the chickens from other production methods. / *Kokoši iz kaveznog uzgoja žive pod većim stresom od kokoši iz ostalih načina proizvodnje.*		
I completely disagree */U potpunosti se ne slažem*	13	5.78
I partially disagree/ *Djelomično se ne slažem*	3	1.33
I do not know / *Ne znam*	29	12.89
I partially agree/ *Djelomično se slažem*	25	11.11
I completely agree / *U potpunosti se slažem*	155	68.89
Eggs from caged hens have a lower nutritional value than the eggs from other production systems. / *Jaja iz kaveznog uzgoja imaju manju nutritivnu vrijednost od jaja podrijetlom iz ostalih načina proizvodnje.*		
I completely disagree */U potpunosti se ne slažem*	21	9.33
I partially disagree/ *Djelomično se ne slažem*	16	7.11
I do not know / *Ne znam*	58	25.78
I partially agree/ *Djelomično se slažem*	32	14.22
I completely agree / *U potpunosti se slažem*	98	43.56
Do eggs from caged hens have a more "yellow" yolk than eggs from other production methods. / *Jaja iz kaveznog uzgoja imaju „**žući**" žumanjak od jaja podrijetlom iz ostalih proizvodnja.*		
I completely disagree */U potpunosti se ne slažem*	99	44.00
I partially disagree/ *Djelomično se ne slažem*	20	8.89
I do not know / *Ne znam*	56	24.89
I partially agree/ *Djelomično se slažem*	17	7.56
I completely agree / *U potpunosti se slažem*	33	14.67

A statement that the cage eggs had a lower nutritional value was agreed upon by 43.56% of respondents, 25.78% of them did not know the answer, and 9.33% did not agree with this assumption at all. A yolk color is one of the most important indicators of egg quality. The yolk color is measured while applying the Roshe fan, which has a color scale of 1 to 16. Number 1 stands for a pale-yellow yolk color, while the number 16 is an indicator that a hen as absorbed a lot of pigment, and the color is dark orange. In the Republic of Croatia, the yolk color of caged eggs ranges between 12.76 and 13.08 (Kralik et al. 2006). The results of this survey show that a majority of respondents (44.00%) do not entirely agree with the assumption that the yolk of cage eggs is more yellow in color than that of eggs from other laying systems. However, it is interesting to note that 24.89% of respondents did not know whether the laying hens' housing system influenced the color of the yolk. This information could indicate that the respondents are not sure which factors have an influence on the color of the yolk. Bejaei et al. (2011) found that consumers who buy free-range eggs prefer a darker yolk color. Fearne and Lavelle (1996) found in their study that respondents believe that eggs from a family farm taste better than eggs from a farm where the hens are kept in cages. Consumers often think that eggs from family farms are tastier, have a better texture and a better color than eggs from a poultry farm (caged hens). The consumers were also interested in the consumption of eggs from the alternative laying-hen rearing systems that used the indigenous breeds (Lordelo et al., 2017).

Table 4 shows the results of consumer opinion on whether a chicken-farming type had an influence on the price and the eggs' shelf life in a store. The table also shows the respondents' answers to the question

of whether a chicken-farming system affects the eggs' safety, weight, and shell quality. When asked whether the caged hens' eggs had a shorter shelf life when compared to the eggs from other farming systems, the largest number of respondents answered that they did not know (31.11%). On the contrary, 27.56% of respondents answered that they did not agree with this fact at all, while 16.44% of respondents fully agreed with this assumption. These responses suggest that the customers were not fully familiar with the Regulation on Market Standards for Eggs, which stipulates that the eggs must remain on the market for twenty-eight days from the day they are placed on the shelves, regardless of how they were produced. Most respondents, 30.67% of them, did not know the answer to the question of whether the caged hens' eggs were larger and whether they had a thicker shell. The fact that caged hens' eggs had a thicker shell and were indeed larger than the eggs from other farming systems was not fully confirmed by 27.56% of respondents, while 16.44% of them fully agreed with this assumption. When asked whether the caged hens' eggs were healthier than the eggs from other farming systems, 40.00% of respondents disagreed with this statement, while 10.67% of respondents fully agreed with it. Out of a total number of respondents, 36.89% agreed with the fact that the egg price was only influenced by a hen-farming type, while 22.22% disagreed with this statement completely.

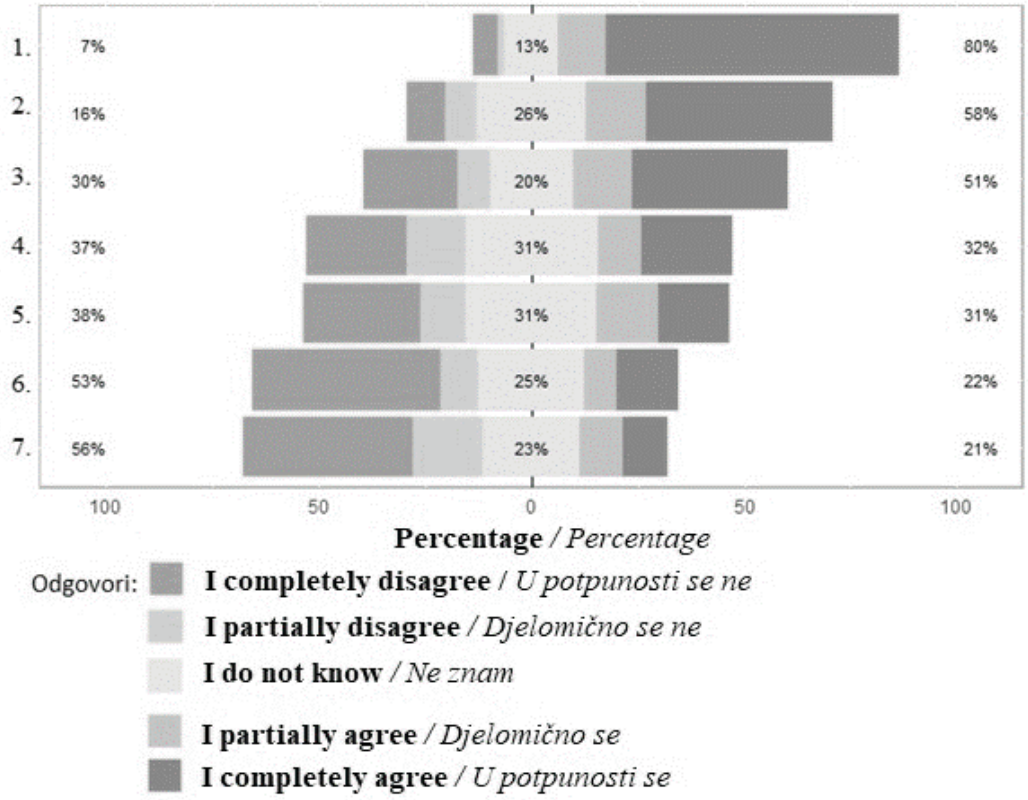
Cao et al. (2021) found that the consumers who have previously purchased the eggs from an alternative laying system cite freshness, health safety, animal welfare, and price as the important factors when purchasing the eggs, while those who have only purchased the caged hens' eggs cite freshness, price, health safety, and flavor as the important factors when purchasing the eggs. A product brand is the least important for both groups, which is not consistent with our findings. As the egg price does not depend on a farming method but is also dependent on the egg weight, it is necessary to better inform the customers thereabout. As an educational measure, it is possible to introduce the workshops in the elementary schools, so that the young people learn what influences the formation of an egg price on the market earlier. Figure 3 shows the respondents' answers to a group of questions about egg quality.

The results of the survey, which are shown in Figure 2, show that the consumers often answer the question with "I do not know." We suspect that the reason for this is a lack of information about a fact whether a chicken farming system affects the quality of the eggs and how much it does so, why the animal welfare is important to us, and how the price of the eggs is formed on the market.

Table 4. The respondents' opinion about the influence of a farming method on a price and shelf life of the in-the-store eggs, shell thickness, and salmonella contamination

Tablica 4. Mišljenje ispitanika o utjecaju načina držanja kokoši na cijenu i rok trajanja jaja u trgovini, na debljinu ljuske i kontaminaciju salmonelom

	N	%
Do eggs from caged hens have a shorter shelf life than eggs from other production methods. / *Jaja iz kaveznog uzgoja imaju kraći rok trajanja u odnosu na jaja iz ostalih proizvodnja.*		
I completely disagree /*U potpunosti se ne slažem*	53	23.56
I partially disagree/ *Djelomično se ne slažem*	31	13.78
I do not know / *Ne znam*	70	31.11
I partially agree/ *Djelomično se slažem*	23	10.22
I completely agree / *U potpunosti se slažem*	48	21.33
Eggs from caged hens are larger and have a thicker shell than eggs from other production methods. / *Jaja iz kaveznog uzgoja su krupnija i imaju deblju ljusku u odnosu na jaja iz ostalih proizvodnja.*		
I completely disagree /*U potpunosti se ne slažem*	62	27.56
I partially disagree/ *Djelomično se ne slažem*	24	10.67
I do not know / *Ne znam*	69	30.67
I partially agree/ *Djelomično se slažem*	33	14.67
I completely agree / *U potpunosti se slažem*	37	16.44
Are caged eggs healthier (lower risk of salmonella) than other production methods. / *Jaja iz kaveznog uzgoja su zdravija (manja mogućnost salmonele) u odnosu na ostale načine proizvodnje.*		
I completely disagree /*U potpunosti se ne slažem*	90	40.00
I partially disagree/ *Djelomično se ne slažem*	37	16.44
I do not know / *Ne znam*	51	22.67
I partially agree/ *Djelomično se slažem*	23	10.22
I completely agree / *U potpunosti se slažem*	24	10.67
The only influence on the egg price is the way the poultry is kept. / *Na cijenu jaja jedini utjecaj ima način držanja peradi.*		
I completely disagree /*U potpunosti se ne slažem*	50	22.22
I partially disagree/ *Djelomično se ne slažem*	17	7.56
I do not know / *Ne znam*	44	19.56
I partially agree/ *Djelomično se slažem*	31	13.78
I completely agree / *U potpunosti se slažem*	83	36.89



Statements-questions: 1. Cage hens live under more stress than the hens from other production methods; 2. Cage eggs have a lower nutritional value than the eggs from other production methods; 3. Cage eggs have a "yellower" yolk than the eggs from other production methods; 4. The caged hens' eggs have a shorter shelf life than the eggs from other production methods; 5. The caged hens' eggs are larger and have a thicker shell than the eggs from other production methods; 6. The caged hens' eggs are healthier (lower risk of salmonella) than the eggs from other production methods; 7. The only influence exerted on the egg price is that of a production method.

Tvrdnje-pitanja: 1. Kokoši iz kaveznoga uzgoja žive pod većim stresom od kokoši iz ostalih načina proizvodnje; 2. Jaja iz kaveznoga uzgoja imaju manju nutritivnu vrijednost od jaja podrijetlom iz ostalih načina proizvodnje; 3. Jaja iz kaveznoga uzgoja imaju „žući" žumanjak od jaja podrijetlom iz ostalih proizvodnja; 4. Jaja iz kaveznoga uzgoja imaju kraći rok trajanja u odnosu na jaja iz ostalih proizvodnja; 5. Jaja iz kaveznoga uzgoja su krupnija i imaju deblju ljusku u odnosu na jaja iz ostalih proizvodnja; 6. Jaja iz kaveznoga uzgoja su zdravija (manja mogućnost salmonele) u odnosu na ostale načine proizvodnje; 7. Na cijenu jaja jedini utjecaj ima način držanja peradi.

Figure 2: A bar chart of the Likert analysis for e a group of questions on egg quality

Grafikon 2. Bar plot Likertove analize za grupu pitanja o kvaliteti jaja

CONCLUSION

According to their preferences, when purchasing the eggs, the consumers prioritize the free-range eggs over those produced in a cage system. This shows that they realize that a cage farming is not the best for the laying hens. A large number of respondents also believe that the way laying hens are kept affects the quality of eggs, particularly the yolk color. However, the results of the survey show that they are not willing to spend more money to buy the eggs from an alternative production system, as a price is still the most important factor for them when buying the eggs. The survey also shows that the consumers know little about the breeding and quality of the eggs they buy on the market. The producers, sellers, and the Ministry of Agriculture should organize various workshops and training sessions to explain to the consumers why the eggs from the alternative farming systems (e.g., organic, free-range, or a barn-based one) are more expensive and what advantages these systems offer over a cage farming in the production of table eggs for consumption. Finally, this paper emphasized a need for research that would incorporate more intrinsic and extrinsic factors in order to enable the more concrete conclusions to be derived.

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VAŽNOST NAČINA DRŽANJA KOKOŠI PRI IZBORU JAJA ZA KUPOVINU I KONZUMACIJU

SAŽETAK

Cilj rada bio je istražiti koliko je potrošačima važan način držanja nesilica prilikom kupovine konzumnih jaja. Istraživanje je provedeno na područjima triju* županija *kontinentalnoga dijela Republike Hrvatske provedbom ankete. Anketirano je 280 ispitanika, a obrađeno je 225 valjanih anketa. Anketi je pristupilo više žena (59,10 %) negoli muškaraca (40,90 %). Najviše ispitanika bilo je u dobi od 30 do 39 godina, zaposlenih i srednjega stručnog obrazovanja. Najviše ispitanika imalo je mjesečni dohodak u obitelji od 265 do 665 €. Ispitanici najčešće jaja kupuju u trgovačkome centru, a konzumiraju ih više puta tjedno. Velik broj ispitanika (201) smatra da način držanja kokoši nesilica utječe na kvalitetu jaja, međutim, ispitanici i dalje nisu spremni odvojiti više novca za kupovinu jaja iz alternativnih uzgoja, na* što *ukazuje odgovor da je cijena glavni čimbenik koji utječe na odabir jaja prilikom kupovine. Rezultati ukazuju da je nužno educirati ljude o načinima držanja kokoši za proizvodnju konzumnih jaja te ih upoznati sa Zakonom o dobrobiti životinja i osnovnim pokazateljima kvalitete jaja.

Ključne riječi: sustav držanja, dobrobit, kvaliteta kokošjih jaja, anketa, potrošači

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