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Consumer Preferences, Prices, Health Statuses and Weights of Chickens Marketed in Major Towns of Tigray-Ethiopia

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Abstract

As there was no scientific information and data regarding consumer preferences, price, health status and market weights of chickens market in Tigray, Ethiopia, the research project was conducted with the objectives of obtaining scientific information and data on chicken market information (consumers' preferences, price, weights, health condition) in five marketplaces. To achieve the objectives, questionnaire survey, observational survey and recoding of weights were employed. Accordingly, the survey revealed that red plumage color chickens (78.3%) which are in the age group of 6-12 months age (54.5%) and local breeds (75.7%) were found to be most preferable in market. Considering consumers' preference to comb type, it was reported that double comb is preferred to single comb (63.5%). Regarding chicken health status, 52.3% and 92.8% respondents said that they do not know any diseases that affect chicken and being transmitted from chicken to man, respectively. On the other hand, sick (63.1%) and dead chickens (55.9) were reported to be seen in marketplaces. As to chicken prices, 94.6% of respondents indicated that during holiday, chicken prices get increased significantly comparing with fasting and non-fasting periods and the overall mean prices were calculated to be 118.13 Birr/chicken. The mean price of chickens was found to be significantly ($P<0.05$) higher in holiday period as compared to that of fasting and non-fasting periods. Mean chicken price was found to be significantly ($P<0.05$) lower and higher in Alamata and Adwa marketplaces, respectively. The overall mean weights of chickens was calculated to be 1.43 kg and considering the comparisons of weights of chickens marketed in the three periods and the five marketplaces, it was reported that chickens marketed in Alamata and Shire marketplaces are heavier and smaller than the chickens marketed in the rest marketplaces, respectively. It can be concluded that the chicken marketing practices is traditional where chickens are marketed informally with lack of health checkup, not consumers' preference oriented, quality oriented. Therefore, the chicken breeding programs as well as production system should address the preference of the consumers, standards on market ages and weights should be introduced.

Keywords: Chicken; Ethiopia; Health; Market; Preference; Price; Weight

Introduction

In Ethiopia, most of the supply of poultry products to the city market is in the form of local eggs and chicken sold in several market places and street corners as well as door-to-door by individual traders. The number of broiler increases during holiday seasons when wholesalers from big cities place their orders. Since wholesalers buy in bulk, the local broiler traders calculate the average prices of the chickens and then determine their selling price. For instance, marketing of village chicken and eggs in the Bure District (North-West Ethiopia) is accomplished in various places including farm gates, local markets and urban markets, and two types of market days namely; conventional (fixed) and non-fixed (random) were identified. Live birds and eggs are either sold directly to consumers or to middle men (intermediaries) for retail in the larger towns and cities. Although each location has its own local market (neighbors and village markets) where transactions take place, marketed produce finally flows to urban consumers. Thus, producer households have a double role in the market chain and have to balance competing demands from household consumption and the buyers in the market place [1]. Consumer perception, health status, price and growth performances (market age and weight) of broilers are reported to have negatively or positively been affected by various factors and the major one are season, plumage colors, market place, means of transportation, feed and healthcare.

In this regard, the high increase in consumers' demand (perceptions) for poultry products mainly in urban areas will have major implications on the prices of the products which obviously is important for those engaged in the sector [2]. Market prices of chicks, meat, and feed vary and these variations can affect enterprise profitability. Similarly, chicken owners considered plumage color and comb type as main determinant factors in selection of birds for production, consumption and marketing purposes. Red and white plumage colors were most preferred and demanded highly in the chicken marketing system. The selection of plumage colors was attributed to attractiveness by the public and high sale price in marketing, regarding comb type, double (rose) comb was more privileged than single comb types in terms of preference, market price and demand in Bure District (North-West Ethiopia). Concerning price of birds with related to color and comb type, the average market price of red and white color local cocks was estimated in different market days. The result revealed that red and white colored matured cocks having a double (rose) type of comb fetched the higher market price as compared to cocks with single type of comb [1].

Chicken handling and transpiration has undergone its own transformation and is major predisposing factor for ill health status of the broilers and marketing is affected by factors such as high transport

cost. To transport chickens, 5 to 7 chickens would be tied together, put upside down, and loaded on the top of a vehicle. Later, people would put 12-15 chickens in a jute sack with small air holes and then load the sacks on top of a vehicle. Nowadays, traders use plastic sacks (Madaberia). They sew two of these together and put 25 to 30 chickens into each. The plastic sacks are readily available in the market, are stronger and hold larger number of chickens than the jute sacks. Production and marketing strategies as well as creating linkages with potential customers and market information sources are mandatory to establish sustainable and profitable broiler market [3].

As it might be true in Tigray districts, the major groups of broiler sold in the Bure District (North-West Ethiopia) were surplus males, old and non-productive hens and sometimes sick birds. Young and productive birds were often sold just before the onset of high risk period of Newcastle disease, mainly during the start of the rainy season (April-June). The price of birds was not similar and fluctuated during the year, generally low in the rainy season and high in the dry season [1]. It was reported that price of broiler varied between months of the year and were determined by a number of driving factors such as demand and supply of chicken products, agro-ecology (market access), product type (sex, age, breed, comb type, etc), season of the year (dry and rainy), market type (urban vs local markets), market day types (holyday vs ordinary market days) and fasting seasons (for example, Pre-Easter fasting season). Due to the impact of diseases and predators, the supply of chicken products during the beginning of the rainy season was very high and that reduces the demand and the price [1].

Lack and inadequacy of poultry marketing information, facilities and opportunities and standards of consumer preferences, price indexes, health status, market age and weights of broiler are a bottleneck to maximize return and profit from poultry development in the country and in Tigray region in particular [2,4,5]. Permanent market linkage with rural chicken producers, traders who directly sell to city dwellers or supplies chickens for wholesalers coming from cities and nearby towns is not yet formally established. There is unplanned, blind and haphazard ways and practices of broiler sale in almost all poultry market areas in the region (Tigray). This has resulted in poor broiler marketability and profitability, broiler price uncertainty and fluctuation, undetermined consumers' preferences to broiler, unknown (standardized) and not yet studied market age and weight of broiler. The reason is that previous research works done on poultry in Ethiopia and particularly in Tigray mostly concentrated on biological aspects of the poultry health, breeding, productivity and production, where information on standards of broiler market age and weight, consumers' preference to broiler, health status, price indexes has been lacking. Due to which, the economic returns and profits out of sale of broiler in almost all major poultry market cities of Tigray have been difficult to make strategic analysis.

Therefore, the objectives of this study were:

1. Exploring evidences on consumers' market preferences and prices of chickens sold in major cities of Tigray
2. Assessing and establishing standard market weights of chickens sold in major cities of Tigray
3. Assessing and determining the health statuses of chickens sold in major cities of Tigray

Materials and Methods

Sample size and Sampling procedure: The sample size required for this study was determined based on the number of chickens available per market area per visit. Data on total chickens' population market in the five cities were obtained from relevant Government Offices and 5% of the total population were taken as sample size for every study area and every visit. Briefly, 5% of the total broilers visiting every market area (study city) in every three visits was randomly selected for the study. Moreover, individuals or institutes engaged in chicken production, chickens trading and wholesaling, and consumers and experts were purposively selected and included in the survey to get primary data on the overall broiler marketing practices, product standards, consumer preferences, market dynamics, prices, health and quality status of marketed broilers, challenges and opportunities and other related information. The time of the visit to every study area was done during normal market days and holidays, accordingly, 2 normal market days 2 months apart and one representative holiday market were selected using purposive sampling strategies.

Study Design: Longitudinal study was conducted from December, 2014 to June, 2015. There were regular visits and during which data on consumers' broiler preference, broiler prices, weight and health status broiler and related data were collected.

Data source and collection

This study was planned to obtained data from both secondary and primary sources. Due to the wide ranging implications of the involvement of many actors in the chicken marketing, primary data were broadly collected by mixing both qualitative and quantitative methods. The following methodological approaches were employed to address the objectives.

Observational survey (OS): Frequent visits (during fasting, holiday and non-fasting periods) were made to the marketplaces. During the visits, health status of each chicken and overall chickens marketing practices were observed by the researchers. The health statuses of the chickens were assessed considering presences of health parameters i.e. manifestation of clinical signs, lesions, abnormal secretions, mortality, and outbreak, and body condition scores as following standard procedure [6].

Measuring live weight: As described in the observational survey section, visits to all marketplaces were made. Live weights of 459 chickens which were marketed in all the marketplaces during visits were measured and recorded. Standard weighing balance was used to directly measure the live body weights of the chicken as per standard procedure [6].

Questionnaire survey (QS): A questionnaire survey was introduced to collect and generate primary data from large number of respondents who were purposively selected from chicken buyers, sellers (producers, farmers), chicken meat traders and poultry production and health experts. In total, about 221 respondents were included. To collect relevant data and information out of the QS, well prepared templates containing guiding checklists and questions were formulated and used following standard procedure.

For the implementation of data collection, the following activities were carried out before going to the field work. The questionnaires were translated into local language (Tigrigna). Questionnaires were filled by the enumerators at market days and hours. Repeat visits were made on the absentees to meet the sampled interviewees.

Data management and analysis

After the completion of data collection, data clearing and analysis follows. To analyze the consumer perception, prices, health status and weights of chickens during marketing and sale, were employed. Two-way ANOVA analysis and multiple comparisons (Post-Hoc Test) were used to analyze correlations and comparisons. Descriptive analysis expressed in terms of tables, charts, mean+SD, percentages and frequencies. P-value was taken as 5% cut off point for all analysis.

Results

Consumers' market preference to chickens

The survey revealed that 81.1% of the respondents expressed that they have their own preferences (chicken color, age, breed and comb type) while purchasing chickens. According to them, the most preferred chicken color, age and breed are red (78.3%), 6-12 months (54.5%) and local breed (75.7%), respectively. Based on respondents' preferences to comb type, 67.6% of them said that they consider comb type as preference criterion to select chicken at market and accordingly 63.5% of them expressed that they prefer double comb to single comb (Table 1).

Factors		Frequency	Percentage	Sample size
Preference to Chicken Color	Yes	180	81.10%	N=217
	No	37	16.70%	
Preferred Color	Red	141	78.30%	N=180
	White-Red	18	10%	
	All except Black	13	7.22%	
	Black	3	1.67%	
	Any color	2	1.11%	
	Bright color	2	1.11%	
	White-black	1	0.56%	
Preferred Age	2-3 months	11	5.00%	N=221
	3-5 months	53	23.90%	
	6-12 months	121	54.50%	
	>1 yr	34	15.30%	
	no age preference	2	0.90%	
Preferred breed	Local	168	75.70%	N=220
	Exotic	9	4.10%	
	Crossed breed	6	2.70%	
	No breed preference	37	16.70%	
Preference to comb type	Yes	150	67.60%	N=180
	No	68	30.60%	
Type of Comb	Single	2	0.90%	N=143
	Double	141	63.50%	

Table 1: Buyers'/Consumers' preference to chicken.

Market prices of chicken

As per the findings on the prices of the chicken showed, 96.4% of the respondents said that there is a chicken price variation during fasting, holiday and non-fasting periods. Among the respondents, 94.6% of them indicated that holiday period is the most important factor where chicken prices get increased (Table 2). It was reported that increased consumer demand (33.3%), holiday (31.6%), seasonal

variation (15.3%) and health status (11.3%) were identified factors to influence the chicken prices.

Factors		Frequency	Percentage	Sample size
Are there factors that affect chicken price?	Yes	190	85.60%	N=202
	No	14	6.30%	
Is there price variation in fasting, holiday and non-fasting periods	Yes	214	96.40%	N=221
	No	7	3%	
In which period is the price become high?	Fasting	4	1.80%	N=215
	Holiday	210	94.60%	
	Non-fasting	1	0.50%	

Table 2: Price indexes of chickens.

Health statuses of chickens

The observational survey revealed that 72.5% of the respondents explained that they do not ask for health status of chickens before purchasing. However, 74.3% of the respondents indicated that they check health status of chickens prior to purchasing them. On top of that 52.3% and 92.8% respondents said that they do not know any diseases that affect chicken and can be transmitted from chicken to man, respectively. On the other hand, 63.1% and 55.9% of the respondents witnessed that they used to see sick and dead chickens at the marketplaces (Table 3).

Factors		Frequency	Percentage	Sample size
Do you ask for health of the chicken before purchase?	Yes	53	23.90%	N=214
	No	161	72.50%	
Do you check the health of the chicken by yourself before purchase?	Yes	165	74.30%	N=207
	No	42	19%	
Do you know any disease that can be affect chicken?	Yes	103	46.40%	N=219
	No	116	52.30%	
Do you know any disease of chicken that can be transmitted to human?	Yes	10	4.50%	N=219
	No	206	92.80%	
Have you ever seen sick chickens at marketplace?	Yes	140	63.10%	N=218
	No	78	35.10%	
Is sick chicken preferred /sold out in market?	Yes	10	4.50%	N=218
	No	208	93.70%	
Have you ever seen dead chickens at marketplace?	Yes	124	55.90%	N=212
	No	88	39.60%	
Have you ever asked the owner about the cause of death the chicken?	Yes	19	8.60%	N=144
	No	125	56.30%	

Table 3: Health conditions of chickens.

Chickens' market prices and weights comparisons among different periods and marketplaces

Chickens' market prices: The maximum, minimum and the overall mean of the calculated prices in were reported to be 230, 25 and 118.13 birr with standard deviation of 32.42. The findings of the measured and recorded prices showed that at least one of the recorded price of the three periods and the five marketplaces was significantly ($P<0.05$) different.

Variables		Sample size (N)	Mean+STDV	P-value
Period	Fasting	229	11.60+29.77	0.000*
	Holiday	103	132.00+35.37	
	Non-fasting	126	118.64+31.12	
Marketplace	Alamata	38	101.67+22.47	0.000*
	Mekelle	142	119.75+30.49	
	Adigrat	101	112.13+36.08	
	Adwa	143	127.83+32.34	
	Shire	34	106.76+24.46	
*The P-value is significant at the 0.05 level				

Table 4: Comparisons of chickens' prices of in different periods and marketplaces.

Factors			Mean differences	P-value
Period	Fasting	Holiday	-2040.00%	0.000*
		Non-fasting	-704.00%	0.112
	Holiday	Non-fasting	1336.00%	0.003*
Marketplace	Alamata	Mekelle	-1810%	0.012*
		Adigrat	-1047.00%	0.709
		Adwa	-2617.00%	0.000*
		Shire	-511.00%	1.000
	Mekelle	Adigrat	762.00%	0.546
		Adwa	-807.00%	0.255
		Shire	1299.00%	0.257
	Adigrat	Adwa	-1570.00%	0.001*
		Shire	536.00%	1.000
	Adwa	Shire	2106.00%	0.003*
*The P-value is significant at the 0.05 level.				

Table 5: Multiple comparisons within factors affecting chicken prices.

Considering the price differences in the three periods, chicken price in holiday period was found to be significantly higher as compared to that of fasting and non-fasting periods. Similarly, chicken prices in Alamata marketplace was significantly (P<0.05) lower than the prices in Mekelle marketplace and Adwa marketplace, and the chicken prices in Adwa marketplace was found to be significantly (P<0.05) higher than that of Adigrat marketplace and Shire marketplace (Tables 4 and 5).

Chickens' market weights: The maximum, minimum and overall mean market weight was calculated to be 3.6 kg, 0.4 kg 1.43 kg with standard deviation of 0.55. Tables 6 and 7 showed that the recorded weights were not significantly (P>0.5) different among the three periods. However, weight of at least one marketplace is significantly (P<0.05) different from the other. The weights recorded in Alamata marketplace were significantly higher than that of Mekelle marketplace, Adwa marketplace and Shire marketplace. Similarly, the weights of Adigrat marketplace were significantly higher than that of Shire. On the other hand, the weights of Mekelle were significantly lower than that of Adigrat marketplace and Adwa marketplace.

Variables		Sample size (N)	Mean+STDV	P-value
Period	Fasting	245	1.44+0.50	0.54
	Holiday	104	1.35+0.48	
	Non-fasting	127	1.46+0.67	
Marketplace	Alamata	50	1.78+0.48	0.000*
	Mekelle	140	1.26+0.44	
	Adigrat	102	1.53+0.47	
	Adwa	142	1.45+0.67	
	Shire	42	1.25+0.61	
*The P-value is significant at the 0.05 level.				

Table 6: Comparisons of chickens' weights of in different periods and marketplaces.

Variables			Mean differences	P-value
Marketplace	Alamata	Mekelle	52.20%	0.000*
		Adigrat	25.20%	0.054
		Adwa	33.50%	0.001*
		Shire	54%	0.000*
	Mekelle	Adigrat	-27.10%	0.001*
		Adwa	-18.70%	0.027*
		Shire	1.20%	1
	Adigrat	Adwa	8.40%	1
		Shire	28.30%	0.032*
	Adwa	Shire	19.90%	0.3
*The P-value is significant at the 0.05 level.				

Table 7: Multiple comparisons within factors affecting chicken weights.

Discussions

The findings of this study are reported for the first time in study areas. The questionnaire survey revealed that the most preferred chicken color, age and breed at market by consumers include red (78.3%), 6-12 months (54.5%) and local breed (75.7%), respectively. Similarly, 63.5% of respondents expressed that double comb is preferred to single comb at market in the five marketplaces. Red colored chickens cost better prices and easily salable than others. During holiday period (94.6%), chicken prices get increased due to fact that there are large number of buyers (consumers) and man-made price increments. The major reason why local chicken breeds are more preferred to exotic breeds is due to their tasty meat. The findings of this study are in line with previous findings studied by Fesseha and Taddele [1] who reported that red and white colored matured cocks having a double (rose) type of comb fetched the higher market price as compared to cocks with single type of comb.

Hence, chicken's breed, color and comp type preferences of consumers should be considered in the chicken breeding strategies and chicken breed selections of the country.

Majority of respondents (72.5%) purchase chickens without asking sellers for health status of chickens but 74.3% respondents said they do chickens' health status check up their own way. And more than half of the respondents used to observe sick and dead chickens at the marketplaces which show that there is health problem of chickens marketed in the marketplaces. Similar findings also reported by Yohannes et al. [6].

Regarding comparisons of prices of the chickens marketed in the three periods and the five marketplaces, the overall mean of the calculated prices in Birr were reported to be 118.13 Birr. It was found to be significantly higher in holiday period as compared to that of fasting and non-fasting periods. Chicken price found to be significantly (P<0.05) lower and higher in Alamata and Adwa marketplaces. The probable reasons for such prices variations might be due to difference demand-supply balance, consumer number and small sample size of respondents in Alamata and Shire marketplace. However, the authors could not get previous research work in the same marketplaces to compare the findings of this paper [7].

Similarly, the maximum, minimum and overall mean weights of chickens are 3.6, 0.4 and 1.43 kg considering the comparisons of weights of chickens market in the three periods and the five marketplaces, it was recorded that chickens marketed in Alamata marketplace are heavier than the chickens marketed in the rest marketplaces. On the contrary, chickens which were markets in shire had smallest weights as compared to those marketed in the other marketplaces.

Considering the two variables (prices and weight), among the five marketplaces, Alamata marketplace is better marketplace to get chickens with good body condition and at fair prices. The probable reasons for the weights variation might to be due to chicken breed, sample size and chicken feeding differences [8].

Conclusion and Recommendations

The present study tried to assess the preferred chicken, prices, weights and health conditions of chickens. It also dealt with chicken prices and weight comparison across different periods and marketplaces. So it can be concluded that the chicken marketing practices is traditional where chickens are marketed informally, and

any type of chicken at any weight were marketed. The overall mean weight and price of the chickens were calculated to be 1.43 Birr which is below the market age i.e. <1.5 Kg and 118.13 Birr, respectively. Red plumage color with double comb type chickens were reported to be preferred by consumers. Moreover, due to the tasty meat they have, local breeds were reported to be preferred by consumers to exotic breeds. Chicken prices and weights were reported to vary in different periods (fasting, holiday and non-fasting), and in different marketplaces. Particularly, chicken prices become high during holidays and heavy weighted chickens are sold in Alamata marketplaces with fair prices. It was reported that there is health problems of the chickens marketed in the marketplaces. Sick chickens are usually brought to market and because of that many chickens are seen dead in the market. There is no chickens' health checkup facility and structure.

Therefore, the following are recommended to be implemented in the future

1. The chicken breeding programs undergoing in the country should consider the preference of consumers to type of chicken (double comb, red color, taste and age)
2. Chicken producers and consumer should consider the periodic/seasonal and marketplaces variations to sell or buy good conditioned chickens at fairs.
3. Modern and formal chicken markets should be introduced and encouraged to sell or buy quality chickens (good body conditions, healthy and preferred one)
4. Standards on minimum market age and weight of chickens should be developed and introduced so as to avoid disparities in chicken performances and market similar products (chickens) with similar prices
5. Healthcare services should be introduced in the chicken market to check health status of chickens marketed in the marketplaces so as to safe guard the consumers from zoonotic and other republic health related problems.

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