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Research Article

Study on socio-economic condition of butchers and trend of market price of red meat at some selected areas in Bangladesh

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Abstract

The study was aimed to assess the socio-economic status of butchers and trend of market price of meat changed from last nine (09) years at five (05) selected areas in Bangladesh such as Dhaka, Chittagong, Rajshahi, Khulna and Rangpur City Corporation. The study was carried out through a structured questionnaire among seventy five (75) selected butchers each survey time where fifteen (15) in each area. The survey was conducted from January to August, 2014 and February to May, 2023. During survey the considered parameters were the butchers age, level of education, family size, land size, housing, source of capital andcurrent red meat price. Result from the study revealed that the respondents average aged in Dhaka, Chittagong, Rajshahi, Khulna and Rangpur city corporation were 40.30, 34.27, 36.27, 36.40 and 35.00, respectively and all of them were male. For literacy rate of respondents it was found that about 56% butchers were had secondary level education, 38.67% butchers had primary level education, 4% had higher secondary level education and only 1.33% were graduate. About 88.23% butchers solely depend on meat processing but along with meat processing 4.71% respondents were engaged with business and 7.06% respondents were engaged with agriculture. In 2014, it was found that all type of meat (beef, buffen, chevon and mutton) price were highest in Dhaka and it was average 582.00, 562.50, 900.00 and 870.00 TK in Chittagong, Khulna, Rajshahi and Rangpur, respectively. In case of Chevon market price was 895.00, 882.00, 870.71 and 865.09 in Rajshahi, Chittagong, Rangpur and Khulna, respectively. For Mutton it was 830.00, 820.00, 820.00 and 816.00 TK in Chittagong, Rajshahi, Rangpur and Khulna, respectively. It was found that market price increased so rapidly and the rate of increasing percentage for beef, buffen, chevon and mutton were 195.27%, 193.76%, 154.83% and 169.93%, respectively. Overall slaughtered number of cattle, buffalo, goat and sheep per week in selected areas were 42.84, 7.47, 23.29 and 4.84, respectively.

Introduction

Meat is the flesh or other edible parts of animals (usually domesticated cattle, swine, and sheep) used for food. The main source of protein, vitamins, and nutrients for the development and functioning of body cells is meat (Zerabruk et al., 2019). Meat is the most precious livestock product and for many people, aids as their foremost choice as basis of animal protein (Akhter et al., 2009; Tsegay, 2012). Meat is nutritious and highly attention-grabbing in appearance at post rigor stage (Akinwumi et al., 2011). Average value of meat protein is about 23% that varies from higher to lower value according to the type of meat source (Rabia et al., 2018). Main constituents of meat are approximately water 75%, protein 19%, intramuscular fat 2.5%, carbohydrate 1.1%, soluble non protein substance 2.3% (Varnam and Sutherland, 2015; Hashem et al., 2021). There are different categories of meat in Bangladesh from different sources such as beef from cattle, chevon from goat, mutton from sheep, and chicken from birds (Ahmed et al., 2010; Soniran and Okubanjo, 2002). In the last two decades meat consumption in the developing countries has been growing at 5-6% per annum (FAO, 2003) and developing countries accounted for around 85% of the rise in global meat consumption between 1998- 2018 (Whitnall and Pitts, 2019). This is mainly due to the rapid population growth, income growth and urbanization in the developing countries (Delgado, 2003; Henchion et al. , 2014; Palmer, 2011).

Demand for meat has been increasing swiftly in Bangladesh alike in other developing countries (Hashem et al., 2022). Price of meat is increasing. Not only beef price but also buffen, chevon and mutton price also increased (Rahman et al., 2020). People of limited income groups and job holders are frustrated and back home with half of their consumption basket to maintain a balance with their income and market rate of meat. To the best of our knowledge, there are so little scholarly studies available on red meat price in Bangladesh. Therefore, a comprehensive study on red meat price using more recent data on the demand for meat in Bangladesh that explain changes in the price patterns are crucial. This paper models the market price for four different types of red meat, namely beef, buffen, chevon and mutton in Bangladesh for the period 2014 to 2023 and also the socio-economic condition of butchers.

Materials and Methods

Study area and selection of respondents

The study was conducted in five selected city corporations namely Dhaka, Chittagong, Rajshahi, Khulnaand Rangpur. Preliminary visits were made for selection of study area. Each time data were collected through questionnaire by selecting 75 respondents where 15 from each city corporation who were involved in slaughtering activities to satisfy the objectives.

Preparation of questionnaire

Keeping the objectives of the study in mind a structured questionnaire was prepared. The questions and statement contained in the questionnaire were very simple, direct and easily understandable by the respondents. The draft questionnaire was pre-tested in the study area. To identify the faulty questions in the draft schedule and necessary corrections were made on the basis of the pre-test results.

Data collection method

Data were collected from respondents by one-to-one interview method. Interviews were normally conducted in slaughter house during their free time. The data were collected following the direct interviews and making personal visits. The questions were asked in a very simple manner with explanation wherever necessary. The relevant data for this study were collected without biasness. Care and caution were taken in the course of data collection to obtain accurate and reliable data. Attention was paid to the mood of butchers and cordial relationship was established between the butchers and the researcher. After completion of each interview, the researcher thanked the respondents for their cooperation.

Data processing and analysis

At the end of data collection, the responses of the respondents that were recorded in the interview schedule were transferred into a master sheet for entering the data into the computer and compiled to facilitate the needed tabulation. Tabular technique was applied for the analysis of data using simple statistical tools like average and percentages through SPSS software.

Results and Discussion

In this study each time 75 respondents were interviewed to find out the socio-economic condition of the respondents and to know the changes of market price of beef, buffen, chevon and mutton. In this study some major characteristics of the respondents were selected to find out the socio-economic condition of the butcher which is shown in Table 1. The selected characteristics included age of the butcher, education, family size, land holding, housing and source of income. Market price of red meat during 2014 and 2023 are shown in Table 2 and Table 3. Price increasing trend of red meat from 2014-2023 in selected city corporations are shown in Table 4 and number of animal slaughtered/week in selected city corporations are presented in Table 5.

Table 1. Socio-economic status of meat processors in different metropolitan cities in Bangladesh

Parameters	Name of city corporation					
	Dhaka	Chittagong	Rajshahi	Khulna	Rangpur	Overall
Gender						
Male	100	100	100	100	100	100
Female	-	-	-	-	-	-
Age (years)	40.33±8.33	34.27±3.49	36.27±6.65	36.4±6.97	35±11.20	36.45±8.02
	(30-60)	(28-40)	(22-45)	(19-50)	(17-55)	(17-60)
Literacy (%)						
Primary	6.67	33.33	53.34	40.00	60.00	38.67
Secondary	86.66	66.67	46.66	46.67	33.33	56.00
Higher secondary	6.67	-	-	6.67	6.67	4.00
Graduation	-	-	-	6.66	-	1.33
Family member (Number)	4.6±1.30	4.4±1.20	4.67±1.49	4.93±1.33	5.27±2.69	4.77±1.73
	(3-8)	(3-7)	(2-7)	(3-9)	(3-13)	(2-13)
Land holding (own; decimal)	0.2±0.54	4.23±2.96	2.70±1.96	6.7±12.34	7.7±10.23	4.30±22.50
	(0-2)	(0-10)	(0-7)	(0-50)	(0-43.5)	(0-50)
Housing (%)						
Own	13.33	86.67	80.00	66.67	80.00	65.33
Rent	86.67	13.33	20.00	33.33	20.00	34.67
Source of income (%)						
Meat processing	83.33	88.23	100.00	100.00	75.00	88.23
Agriculture	-	-	-	-	20.00	4.71
Business	16.67	11.77	-	-	5.00	7.06
Working experience (%)						
1-2 years	12	13	7	8	10	10
2-8 years	45	40	42	35	38	40
8-16 years	35	33	30	40	37	35
Over 16 years	8	17	21	17	15	15

Gender

All surveyed respondents were male. Alam et al. , (2020) also found the same results.

Age of the respondents

According to data, it showed that in Dhaka, Chittagong, Rajshahi, Khulna and Rangpur city corporations, the average age of butchers were 40.3, 34.27, 36.27 36.4 and 35, respectively. The average age of butchers among the studied area was 36.45. The results of this study are similar with Alam et al. (2020) where they reported that a majority of slaughterer were middle-aged (31-

40 years) representing 37% of workers, followed by younger aged (20-30 years) group 28% in Mymensingh and Gazipur district of Bangladesh. Wambui et al. (2017) also reported most of the meat handlers in slaughterhouses in Kenya were middle-aged (31-40 years).

Level of education

The highest average literacy rate of respondents was 56% in secondary and the lowest average literacy rate was 1.33% in graduation. In Bangladesh, the current educational situation is improving. In 2017, 98% of children attended primary school and about 80% completed their primary level education. The national enrolment rate of secondary education and tertiary education is 63% and 17.33%, respectively (UNESCO, 2017). Comparing to the national average of education, the educational level of workers in slaughterhouses and meat selling centres are low. Wambui et al. (2017) also reported most of the meat handlers in slaughterhouses in Kenya had primary level education only and 8% of workers lacked formal education. Almost similar result found by Alam et al. (2020) where they reported that a majority of workers surveyed had a basic level education (84%), with most of them graduating from primary school (64%), 15% with secondary education and 5% with tertiary level education, 16% had no education. Siluma et al. (2023) found that about 68% participants at the supermarket butcheries studied up to secondary school and only 6% from the village butcheries obtained primary education.

Family size

Average family member's number were 4.6, 4.4, 4.67, 4.93 and 5, respectively and the average family size 4.77 of the respondents in the study area which was lower than that of the national average of 4.9 (BBS, 2008).

Land size and source of income

Land holding were about 0.20, 4.23, 2.70, 6.70, 7.70 decimals, respectively in five metropolitan cities. About 65.33% of butchers living in their own house and 34.67 were the average of butchers living in rent house. Most of the respondent source of income engaged with meat processing and it was about 88.23%. Few butchers were dependent on agriculture (4.71%) and 7.06% on business. Siluma et al. (2023) found that most of the butchery workers belonged to the poor and lower middle class income in South Africa. The workers of sample slaughterhouses and meat selling centers earned an average of 3.5 USD to 4.7 USD/ day (Monthly income 105 USD -141 USD). The average monthly wage of private sector workers are 156 USD/month in 2017 (Trading Economics, 2018) and the minimum wage of Government employees in Bangladesh was 174 USD/month in 2015 (Ministry of Finance, 2015).

Working experience

It was found that 35% had 8-16 years of work experience, 40% had 2-8 years of work experience, 15% had more than 16 years of experience and 10% had less than 2 years of experience. In a study examining Serbian meat establishment, Smigic et al. (2016) found most of the workers possessed 2-8 years of work experience. Compared to Serbia, older and more experienced persons are working in the meat sector of Bangladesh. Alam et al. (2020) almost found same result where 40% had 8-16 years of experience, 35% had 2-8 years of experience, 19% had more than 16 years of experience and only 6% had less than 2 years of experience.

Table 2: Price (Tk/kg) of red meat in different city corporation in 2014

Parameters	Name of city corporation					
	Dhaka	**Chittagong**	**Rajshahi**	**Khulna**	**Rangpur**	**Overall**
Beef	268.00 (260-280)	251.00 (240-260)	240.00 (220-250)	233.75 (220-250)	244.45 (240-250)	248.08 (220-280)
Buffen	252.5 (240-260)	250.00 (240-260)	210.00 (200-220)	225.00 (220-230)	210.00 (200-220)	237.27 (200-260)
Chevon	418.00 (400-450)	400.00 (360-420)	416.00 (400-420)	369.09 (350-400)	385.71 (350-420)	392.42 (350-450)
Mutton	400.00 (380-420)	360.00 (350-380)	350.00 (350-350)	346.00 (340-350)	350.00 (350-350)	359.13 (340-420)

Table 3. Price (Tk/kg) of red meat in different city corporation in 2023

Parameters	Name of city corporation					
	Dhaka	**Chittagong**	**Rajshahi**	**Khulna**	**Rangpur**	**Overall**
Beef	740.00 (730-750)	735.00 (730-745)	732.50 (725-735)	725.00 (720-740)	730.00 (720-740)	732.50 (720-750)
Buffen	720.50 (700-730)	710.00 (700-720)	680.00 (670-690)	700.00 (690-710)	675.00 (670-680)	697.00 (670-730)
Chevon	1050.00 (1020-1070)	1020.00 (1000-1030)	1000.00 (960-1010)	960.00 (950-970)	970.00 (940-980)	1000.00 (940-1070)
Mutton	980.00 (970-1000)	960.00 (950-970)	955.00 (940-960)	952.00 (940-970)	950.00 (960-980)	959.40 (940-1000)

Table 2 showed that market price of beef was highest in Dhaka and then Chittagong, Rangpur, Rajshahi and Khulna, respectively. Buffen market price was highest in Dhaka and then Chittagong, Khulna, Rajshahi and Rangpur, respectively. Chevon market price was also highest in Dhaka and then Rajshahi, Chittagong, Rangpur and Khulna. Mutton price was highest in Dhaka, Chittagong, Rajshahi, Rangpur and Khulna, respectively. Table 3 showed that overall market price of beef in studied area was Tk 732.5 and highest in Dhaka, Chittagong, Rajshahi, Rangpur and Khulna, respectively. In case of buffen it was 697.00 TK and highest in Dhaka, Chittagong, Khulna, Rajshahi and Rangpur, respectively. For chevon it was found that overall market price was Tk 1000.00 and highest in Chittagong, Rajshahiand Rangpur, respectively. In case of mutton overall market price was Tk 959.4 and highest in Chittagong, Rajshahi, Khulna and Rangpur, respectively. Selvanathan et al., (2020) found that

in 2015, per kg beef market price was Tk 343.54 and mutton price was Tk 403.02 and in 2016, it was Tk 466.75, for mutton it was Tk 568.96. It was also found that in 2017 beef price was Tk 499.35 per Kg and mutton price was Tk 658.86. According to Consumer Association of Bangladesh (CAB), in 2017 beef price per kg was Tk 520.00, in 2018 beef was sold at Tk 527.00, in 2020 Tk 588.00 and in 2021 Tk 600.00 per kg. According to Bangladesh Bureau of Statistics, in 2021-2022 per kg of beef price was Tk 600.46 and for mutton it was Tk 800.56. But in March 2023 it becomes Tk 750.00 for beef and Tk 1020.00 for mutton.

Table 4. Price increasing trend of red meat from 2014-2023 in selected city corporations

Meat type	Overall price in selected areas		Price changed (%)
	2014	2023	
Beef	248.08	732.5	195.27
Buffen	237.27	697.00	193.76
Chevon	392.42	1000.00	154.83
Mutton	359.13	959.4	169.93

Table 4: showed that just only for nine years (2014 to 2023) difference price increased 195.27%, 193.76%, 154.83% and 169.93% for beef, buffen, chevon and mutton, respectively.

Table 5. Number of animal slaughtered/week in selected city corporations

Species	Stages	Name of city corporation					
		Dhaka	Chittagong	Rajshahi	Khulna	Rangpur	Overall
Cattle	Bull	24.91	17.83	16.05	7.37	22.09	
	Bullock	21.57	15.77	15.03	12.52	13.90	
	Heifer	6.79	2.24	9.16	2.15	5.37	
	cow	4.79	3.73	1.31	9.01	2.61	
	Total	58.05	39.57	41.55	31.05	43.97	42.84
Buffalo	Bull	8.20	7.00	0.33	0.33	0.20	
	Bullock	7.00	6.00	0.40	0.20	0.40	
	Heifer	0.00	3.70	0.13	0.00	0.13	
	cow	0.00	2.80	0.07	0.00	0.20	
	Total	15.20	19.50	0.93	0.53	0.93	7.47
Goat	Castrated	19.33	9.67	16.20	1.56	7.90	
	Female	24.13	6.20	4.93	10.03	2.47	
	Buck	0.00	9.00	0.95	0.06	4.00	
	Total	43.47	24.87	22.08	11.65	14.37	23.29
Sheep	Castrated	4.20	2.33	0.93	0.79	0.72	
	Female	7.20	1.05	1.20	3.89	0.96	
	Buck	0.00	0.15	0.21	0.17	0.38	
	Total	11.40	3.53	2.34	4.85	2.07	4.84

Table 5 represent the data found from field survey conducted in 2014, in selected city corporations. It showed that per week overall slaughtered number of cattle, buffalo, goat and sheep in selected areas were 42.84, 7.47, 23.29 and 4.84 respectively. Number of cattle slaughtered per week in Dhaka, Chittagong, Rajshahi, Khulna and Chittagong were 58.05, 39.57, 41.55, 31.05 and 43.97, respectively. For buffalo it was 15.20, 19.50, 0.93, 0.53 and 0.93, respectively and for goat it was 43.47, 24.87, 22.08, 11.65 and 14.37, respectively. In case of sheep, total slaughtered number per week in Dhaka, Chittagong, Rajshahi, Khulna and Chittagong were 11.40, 3.53, 2.34, 4.85 and 2.07, respectively.

Conclusions

It can be concluded that majority of the butchers were low educated, marginal, smaller family size and their source of income is mainly associated with meat processing. It is also shown that day by day market price of different species of meat is increasing very rapidly. To make beef, buffen, chevon and mutton more affordable for the public, focus should be given on breed development for cost-efficient meat production, to cultivate improved grass and making silage to reduce feed imports. We should be ensure selling cattle hides and skins at fair prices to impact meat prices positively, lowering rent charges and toll rates at cattle markets and utilization of by-products market should be developed.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Ahmed T, Hashem MA, Khan M, Rahman MF, Hossain MM. 2010. Factors related to small scale cattle fattening in rural areas of Bangladesh. Bang. J. Anim. Sci. 39(1-2): 116-124.

Akhter S, Rahman M, Hossain MM, Hashem MA. 2009. Effects of drying as a preservation technique on nutrient contents of beef. J. Bangladesh Agril. Univ. 7 (1): 63-68.

Akinwumi AO, Odunsi AA, Omojola AB, Aworemi JR and Aderinola OA. 2011. Consumer perception and preference for meat types in Ogbomoso area of Oyo State, Nigeria. International Journal of Applied Agriculture and Apiculture Research, 7(1-2): 96-106.

Alam MK, Yoshino K, Hossain MM. 2020. Present Working Conditions in Slaughterhouses and Meat Selling Centres and Food Safety of Workers in Two Districts of Bangladesh. Pertanika Journal of Social Science and Humanities, 28(2): 867-881.

BBS. 2008. Bangladesh Bureau of Statistics. Govt. of Bangladesh.

BBS. 2023. Bangladesh Bureau of Statistics. Govt. of Bangladesh.

Delgado CL. 2003. Rising Consumption of Meat and Milk in Developing Countries Has Created a New Food Revolution. The Journal of Nutrition, 133 (11), 3907S-3910S.

Food and Agriculture Organization, 2003. World Agriculture: Towards 2015/2030 Rome: Earthscan Publications Ltd.

Hashem MA, Tule SA, Khan M, Rahman MM, Azad MAK, Ali MS. 2021. Prediction of beef quality traits through mini NIR spectrophotometer and multivariate analyses. Meat Research, 1(1): 1-9 Article 6.

Hashem MA, Islam MR, Hossain MM, Alam AMMN, Khan M. 2022. Prediction of chevon quality through near infrared spectroscopy and multivariate analyses. Meat Research, 2(6), Article 37.

Henchion M, McCarthy M, Resconi VC, TroyD. 2014. Meat Consumption: Trends and Quality Matters. Meat Science, 98(3), 561-568.

Ministry of Finance, 2015. National pay scale. Dhaka, Bangladesh: Author. Retrieved October 12, 2018, from http://www.mof.gov.bd/site/ page/79e7315c-8455-4c48-9e27 89b8b04e063c/ National-Pay-Scale---2015.

Palmer CM. 2011. The Demand for Meat and Patterns of Consumption: An Introductory Guide Nottingham: Nottingham University Press.

Rabia SA, Ali I, Muhammad BH. 2018. Nutritional Composition of Meat, Meat Science and Nutrition, Muhammad Sajid Arshad, Intech Open.

Rahman MF, Iqbal A, Hashem MA, Adedeji AA. 2020. Quality Assessment of Beef Using Computer Vision Technology. Food Sci. Anim. Resour. 40(6): 896-907.

Selvanathan EA, Jayasinghe M, Hossain MM, Selvanathan S. 2020. Modelling the Demand for Meat in Bangladesh. In Islam MM, Hossain MM Hossain (Eds.), Science and Technology Innovation for a Sustainable Economy (1 ed., pp.135-151). Springer, Cham. https://doi.org/10.1007/978-3-030-47166-8_8.

Siluma BJ, Kgatla ET, Nethathe B, Ramashia SE. 2023. Evaluation of Meat Safety Practices and Hygiene among Different Butcheries and Supermarkets in Vhembe District, Limpopo Province, South Africa. International Journal of Environmental Research and Public Health, 20(3): 22-30.

Smigic N, Antic D, Blagojevic B, Tomasevic I, Djekic I. 2016. The level of food safety knowledge among meat handlers. British Food Journal, 118(1): 9-25.

Soniran OG, Okubanjo AO. 2002. Physioco-chemical and sensory characteristics of pork loin roast cooked to three internal temperatures. Nigerian Journal of Animal Production, 29 (1): 138-141.

Trading Economics. 2018. Bangladesh minimum wages. Trading Economics. Retrieved October 3, 2018, from https://tradingeconomics.com/ bangladesh/minimum-wages.

Tsegay H. 2012. Consumer perception and preferences of meat types in Harare and Haramaya province, Ethiopia. Journal of Microbiology, Biotechnology and Food Science, 2(3): 959-969.

United Nations Educational, Scientific and Cultural Organization. 2017. Country profile, Bangladesh. Montreal, Canada: UNESCO Institute for Statistics. Retrieved September 10, 2018, from http://uis.unesco.org/country/BD.

Varnam A and Sutherland JM. 2015. Meat and Meat product: Technology, Chemistry and Microbiology. Chapman and Hall, 2-6 Boundary Row, London, SEI 8HN, UK.

Wambui J, Karuri E, Lamuka P, Matofari J. 2017. Good hygiene practices among meat handler in small and medium enterprise slaughterhouses in Kenya. Food Control, 81(11): 34-39.

Whitnall T, and Pitts N. 2019. Meat consumption: Analysis of Global Meat Consumption Patterns. Retrieved from http://www.agriculture.gov.au/abares/researchtopics/agricultural-commodities/mar-2019/meat-consumption

Zerabruk K, Retta N, Muleta D, Tefera A.T. 2019. Assessment of Microbiological Safety and Quality of Minced Meat and Meat Contact Surfaces in Selected Butcher Shops of Addis Ababa, Ethiopia. Journal of Food Quality.