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Research Article

Awareness creation and impact assessment of meat retailers during Covid-19 lockdown in Sherpur District

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Abstract

The research was conducted to create awareness and evaluate the impact of Covid-19 lockdown on meat retailer's income in Sherpur District. A total number of 50 meat retailers (beef, chevon, broiler, mutton and chicken) were surveyed through a structured questionnaire for collecting necessary data and latent variables. Collected data were analyzed through descriptive statistics and regression model. Awareness were created by displaying a poster in front of meat retailer's shop and distribution of Covid-19 kit which contains soap, sanitizer, face mask, hair net and hand gloves. Practical demonstration was given how to wear the kit materials. Meat retailers were very happy to wear from hypothetical observations. Results showed that average age, education and family size of meat retailers were 41.86 years, 5.96, and 6.16, respectively. The price of beef before, during and after lockdown was BDT 523.52, 477.64 and 542.00, respectively. Simarlry, the price of broiler meat and sonali chicken meat before, during and after lockdown was BDT 129.68, 95.59, 137.65; 182.50, 167.50, and 217.50, respectively. During Covid-19 situation the income of meat retailers became much lower as compared to any other critical conditions. About 100% meat retailers faced various problems towards buying and selling of animals, lack of consumers, and lack of demand for meat. The prices of all kinds of meat namely beef, chevon, and chicken meat became drastically lower during pandemic. About 84% meat retailers used face mask, 60% maintained physical distance and 2% people tested for corona virus. During lockdown 98% meat retailers did not get any financial support from government, NGOs or any other private organizations. They did not get any kind of help to create awareness from the government or local authority. Despite facing all these problems, 98% meat retailers would like to continue their meat business. Meat retailers demanded subsidy to maintain their livelihood during lockdown. In conclusion, awareness was created through poster and supplied Covid-19 kit among meat retailers and they need government incentive during lockdown to maintain their livelihood since income of meat retailers was negatively and significantly decreased.

Introduction

Coronaviruses are a large family of viruses. In humans, several Corona viruses are known to cause respiratory infections ranging from common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered Corona virus causes Covid-19. The Covid-19 is the name of the disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2). There is no evidence that the new coronavirus that causes Covid-19 can be transmitted by food. The virus is transmitted primarily by people who are infected through coughing and sneezing droplets which are then picked up by another person (Codex Alimentarius, 2020). The precise origin of COVID-19 remains under investigation, but ongoing research continues to confirm that "domestic livestock production is safe and has not played a role in the spread of Covid-19". With current knowledge of affairs of 2019-nCOV, consumption of poultry and its products may be considered safe. There is no scientific evidence to show that COVID-19 spread through eating chicken, beef, mutton, sea food.

FAO and WHO (2020) reports that heating at 56°C (133°F) for 15 minutes substantially reduced the infectivity of the virus, so any meat cooked to recommend temperatures should have no viable SARS-CoV2 left even if it is on raw meat. The Covid-19 pandemic impacted meat production, supply chain, and meat prices that caused a severe socio-economic crisis worldwide. Initially, meat and meat products' prices increased due to less production and increased demand because of panic buying. Later on, both meat production and demand were significantly decreased due to lockdown restrictions and lower purchasing power of the consumers that resulted in decreasing meat prices. Meat and poultry sector activities include animal/poultry production, transportation, slaughtering, processing, distribution, retailing and consumption. Meat and poultry processing workers may be exposed to the infectious virus through respiratory droplets in the air when the infected plant worker cough or sneeze. It is also possible that exposure could occur from contact with contaminated surfaces or objects such as tools, workstations or dining tables. Shared spaces such as canteens, locker rooms, and entrances/exits, to the facility may contribute to their risk (www.fssai.gov.in). The lockdown during the Corona pandemic and the temporary cessation of out-of-home consumption will lead to a noticeable drop in meat consumption in the EU this year. The EU Commission estimates that, compared to 2019, the 27 member states will consume 844,000 ton or 2.3% less, with a total consumption of 36.59 mill. ton. Average per capita consumption is expected to fall by 1.7 kg from 67.1 kg to 65.4 kg. This would be the lowest level since 2015 (Editor fleischwirtschaft.com, Thursday, July 23, 2020). Bangladesh detected her first Covid-19 infected patients on 8 March, which began with three in number.

A research in Australia's Sydney University suggests a 1 percent fall in humidity could increase the number of infections by 6 percent. It also said only lower humidity was associated with an increase in Covid-19 cases, not temperature (The daily Sun, 22 July 2020; The Daily Star. 2020).

There are so many papers have been published among most of them studied epidemiological, demographic, and clinical issues of the virus and its outbreak. Very few studied about the world economy but it is essential to identify the economic impact of corona virus pandemic. This paper attempts to identify the current and future likely economic implications of the coronavirus pandemic in Bangladesh. No fruitful research yet been carried out to aware the meat processors against Covid-19 to produce hygienic and clean meat production in Bangladesh. Now more prospective and emerging based studies are needed on the impact of Covid-19 on meat sectors in Bangladesh. Hence, the present study was undertaken to distribute Covid-19 kits and posters to create awareness and to assess the impact of government imposed lockdown on meat retailer's income generation.

Materials and Methods

Selection of region

For the study Sherpur district was selected purposively. The reason behind selection of aforesaid district was intensity of Covid-19 infection among peoples, density of population, educational institution, migration of mass peoples etc. In terms of infection Sherpur was red zone which was affected enormously.

Selection of sample respondents

Meat retailers were the target populations for this study. Fifty retailers of meats (red meat and poultry) were selected randomly from the population of retailers in Sherpur region.

Distribution of Covid-19 kits and posters

A kit comprising of hairnet, reusable mask and alcohol based sanitizer and hand washing liquid soap were distributed in around 50 retail meat shops across Sherpur district. The printed posters had also been shared and developed with district livestock officials for wider distribution among stakeholders in different places to create awareness.

Assessment of impacts through survey

To have an impact before and after implementation of the project a survey was conducted after distribution of the kits and posters at the end of the project period. To conduct a survey a structured and pre-tested questionnaire was prepared encompassing all factors and actors related to meat hygiene and sanitation and Covid-19 infection. The survey was conducted through direct interview method with the help of trained enumerators with the pre-tested and revised questionnaires.

Statistical analysis

Both descriptive and functional analyses were carried out in this study. As descriptive analysis some descriptive statistics like tables, graphs, average, percentage, standard deviations etc were calculated. As functional analysis multiple regression and binary logistic regression models were formulated and estimated to have a change in the key dependent variables. Factors affecting income of retailers were estimated using the following multiple linear regression model:

$Yi = \beta0 + \beta1X1i + \beta2X2i + \beta3X3i + \beta4X4i + \beta5D1i + \beta6D2i + Ui$

Where, Y= Yearly income of meat retailers (BDT)

X1= Investment of meat retailers

X2= Price per kg of meat (BDT)

X3= Education of retailers

X4= Experience of retailers (Year of business)

D1= Dummy variable which assumes 1 for increase of income and 0 for decrease of income due to Covid-19.

D2= Dummy variable which assumes 1 for increase of hygiene and sanitation and 0 for decrease of hygiene and sanitation during Covid-19 infection.

Binary Logistic Regression Model: Let Y be a dichotomous dependent variable where Y = 1 for hygienic environment for meat processing and selling and Y = 0 otherwise. Let X be an independent variable, the form of logistic regression model (Gujarati 2007) is and

For more than one independent variables-

l = 1, 2 ... k, andi = 1, 2, ..., n

Explicit form of binary logistic regression

$Logit\ L = \beta0 + \beta1X1i + \beta2X2i + \beta3X3i + \beta4X4i + Ui$

Where X1= Income, X2=Education, X3= Experiences (Year of business), X4=Family size.

SPSS software was mostly used to analyze the data generated by the research project.

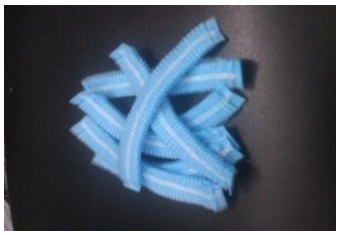
Awareness creation

Awareness of meat retailers were created through the distribution of Covid-19 kits and poster exhibition (Figure 1, 2 and 3). Practical demonstration was given by explaining the importance of kit materials and posters. How to wear hair nets, face mask, gloves and use of sanitizer and soap for every selling were demonstrated and ensured those for daily practicing. After periodic visit the use of Covid-19 kit were verified and confirmed that our know-how are working well.

Hand gloves

Hand wash

Hand sanitizer



Hair net

Face mask

Figure 1. Covid-19 kit materials.

Figure 2. Distribution of Covid-19 kit materials.

Figure 3. Demonstration of posters to meat retailers.

Impact assessment on income generation of meat retailers

Table 1 showed the demographic information of the meat retailers in Sherpur district. From this Table it showed that age of respondent varied from 20 to 84 years and the average was about 42 years. BBS (2020) showed that the average age of people of Bangladesh is 72.6 years which is higher as compared to the present findings. Simiral results were found by Hossain et al., (2021 and 2018). Rahim et al. (2018) and Sarker et al. (2017) reported that average age group was 30-45 years in their studies which were not agreed to the present study. Education of the respondent ranged from illiterate to 18 years of schooling and average education level was 6 years. BBS (2020) showed that average schooling persons of Bangladesh is 5 years which is almost similar to this study. Family size ranged from 2 to 20 and average family size was 6.16 persons. This result was higher than national average (4.9) reported by Hossain et al. (2018 and 2021) and BBS (2008). It implied that meat retailer family had greater family size due to the lack of knowledge on family planning of Bangladesh.

Table 1. Demographic information of the meat retailer in Sherpur district

Variables	N	Minimum	Maximum	Mean	SD
Age of respondent	50	20	84	41.86	14.61
Education of respondent	50	0	18	5.96	5.30
Family size	50	2	20	6.16	3.43

Beef price before, after and during lockdown Covid-19 in Sherpur district is shown in Table 2. Price of beef before lockdown of pandemic in Sherpur district ranged from BDT 480 to 550 per kg and average price was about BDT 523 per kg. A report from tbsnews.net (2020) showed that price of beef before lockdown was BDT 500 which was lower compared to this study. The price of beef during lockdown varied from BDT 450 to 500 per kg and average price was BDT 478 per kg. The report from tbsnews.net (2020) showed that price of beef during lockdown was BDT 650 which was higher compared to this study. Price of beef after lockdown ranged from BDT 510 to 550 per kg and average price was almost BDT 543 per kg. The report showed that price of beef after lockdown was BDT 600. It was also relatively higher as compared to the present study.

Table 2. Beef price before, after and during lockdown in Covid-19 pandemic

Variables(price/kg)	N	Minimum	Maximum	Mean	SD
Before lockdown	17	480.00	550.00	523.52	22.34
During lockdown	17	450.00	500.00	477.64	22.50
After lockdown	17	510.00	550.00	542.94	13.11

Broiler meat price before, after and during lockdown in Covid-19 pandemic

Broiler meat price before, after and during lockdown Covid-19 in Sherpur district is shown in Table 3. Price of broiler meat before lockdown of pandemic ranged from BDT 100 to 150 per kg and average price was BDT 130 per kg. Poultry Professionals Bangladesh (PPB) (2020) reported that the price of broiler meat before lockdown was BDT 95 per kg which was lower as compared to this study. The price of broiler meat during lockdown of pandemic ranged from BDT 90 to 130 per kg and average price was BDT 96 per kg. The PPB (2020) reported that the price of broiler meat during lockdown was BDT 90 per kg which was almost similar to this study. Price of broiler meat after lockdown of pandemic ranges from BDT 110 to 155 per kg and average price was BDT 138 per kg. The PPB (2020) and WPSA-BB (2020) reported that the price of broiler meat after lockdown was BDT 105 per kg which was lower as compared to this study.

Table 3. Broiler meat price before, after and during lockdown in Covid-19 pandemic

Variables (price/kg)	N	Minimum	Maximum	Mean	Std. Deviation
Before lockdown	32	100.00	150.00	129.68	8.88
During lockdown	32	90.00	130.00	95.59	20.75
After lockdown	32	110.00	155.00	137.65	10.84

Price of Sonali chicken meat before, after and during lockdown Covid-19 in Sherpur district is shown in Table 4. The price of Sonali chicken before lockdown of pandemic ranged from BDT 160 to 200 per kg and average price was BDT 183 per kg. Poultry Professionals Bangladesh (2020) reported that the price of Sonali chicken before lockdown BDT 170 per kg which was lower compared to this study. Price of Sonali chicken during lockdown of pandemic ranged from BDT 150 to 180 per kg and average price was about BDT 168 per kg. Poultry Professionals Bangladesh (2020) reported that the price of Sonali chicken during lockdown BDT 180 per kg which was higher compared to this study. Price of Sonali chicken after lockdown of pandemic ranged from BDT 210 to 220 per kg and average price was about BDT 218 per kg. Poultry Professionals Bangladesh (2020) reported that the price of Sonali chicken after lockdown was BDT 160 per kg which had lower as compared to this study.

Table 4. Price of Sonali chicken meat before, after and during lockdown in Covid-19 pandemic

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Before lockdown	4	160.00	200.00	182.50	17.07
During lockdown	4	150.00	180.00	167.50	15.00
After lockdown	4	210.00	220.00	217.50	5.00

Response of meat retailers in relation to Covid -19 pandemic is shown in Table 5. About 100% meat retailers were faced problem during buying and selling of animals. Only 2% of the meat retailers had done Corona test. According to DGHS (2020) average 3.85% people tested for corona in Bangladesh but in our study we found that only 2% meat retailer tested for corona which was higher compared to this study. The percentage of them using mask was 84%. According to the daily Ittefaq (3 September, 2020), around 33% people used mask but in our study we found that average 84% meat retailer used mask during pandemic lockdown which was very much higher than the reported news. Among 50 retailers none used sanitizer after every selling. Make aware to meat buyer was 90% retailers. Number of retailers who did not get financial help was 49 out 50 respondents. According to Prime Minister's of Bangladesh speech about 4.31% people got financial support during Covid lockdown which was higher than our finding. Washing hand with soap after every slaughtering was 0%. Only 2% retailer got helped to create awareness. Despite Covid-19 almost 98% retailers wanted to continue with their meat business. Sixty per cent meat retailers maintained social distance during pandemic and 40% did not maintain it. In retailer shops, 32% consumers maintained social distance and 68% consumers did not maintain it. During pandemic 96% buying and selling took place in local market and 4% did not. All 100% retailers felt interruption in meat business during pandemic and all 100% retailers got threat during pandemic. The demand for meat was also reduced during lockdown in Covid-19 pandemic.

Table 5. Response of meat retailers in relation to Covid -19 pandemic

Questions related to Covid-19	**Percentage**	
	Yes	**No**
Washing hand with soap after every slaughtering	0	100
Use of sanitizer after every selling	0	100
Use of mask	84	16
Testing for corona	2	98
Reduce demand during Covid -19	100	0
Problem facing during buying and selling of animal	100	0
Make aware to meat buyer	90	10
Maintaining social distance by meat retailers	60	40
Maintaining social distance by consumers	32	68
Like to continue meat business despite Covid -19	98	2
Interruption in meat business	100	0
Getting threat from administration	98	2
Financial support achieved during pandemic	2	98
Buying and selling taken place at local market	96	4
Any help to create awareness	2	98

Total respondents number, n= 50

Identification the significance of difference between yearly incomes during and before pandemic

Yearly income generation differences during and before pandemic is shown in Table 6. From t-test and regression model it is clear that income of meat retailers was negatively and significantly decreased during government imposed lockdown. Regression model is well fitted since F value is highly significant ($p<o.01$).

Table 6. Yearly income differences during lockdown and previous year Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Income from Meat processing business last year (BDT)	50	36000.00	720000.00	212640.0000	144992.8583
Yearly income during Covid-19	50	12000.00	480000.00	118880.0000	110070.9678
Difference in Yearly income during pandemic and previous year	50	-264000.00	108000.00	-93760.0000	63044.70717
Valid N (listwise)	50			t= -10.52**	

The following ANOVA model has been estimated for meat retailer's annual income during Covid-19 pandemic in Sherpur district:

$Yi=ß_0+ ß_1D_i+U_i$

Where, Y=Income, $ß_0$=Constant, $ß_1$=Regression Co-efficient, D_i=1 for income during pandemic, D_i=0 for income before pandemic, U_i=Random error component which is assumed to be independently and normally distributed with mean 0 and variance σ^2.

$\acute{Y}_i$=212640.00**- 93760.00** D_i

(18204.00) (25744.34)

$\acute{R}^2$=0.11, F=13.26**

Conclusions

In conclusion, awareness of meat retailers' was created through the supplied Covid-19 kits and poster demonstrations. Income of meat retailers drastically reduced during government imposed lockdown. Hence, meat retailers demanded incentives to maintain their livelihood and income in such kind of catastrophes'.

Conflicts of Interest

The authors declare that there are no potential conflicts of interests.

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