

Knowledge on Safe Handling of Food during COVID-19 Pandemic: A Questionnaire Based Survey

Ritu Geu Goswami

Assistant Director, National Institute of Public Cooperation & Child Development (NIPCCD), (Ministry of Women & Child Development) Government of India, Regional Centre Guwahati, Jawaharnagar, Khanapara Guwahati- 781022, Assam, India

Published: May 12, 2020

ABSTRACT

The recently discovered Corona virus (novel coronavirus or COVID-19) are a large family of viruses which is not transmitted through food which is cooked safely but can be transmitted through food products as the virus can stay on surfaces of the food products for several days. The aim of this study is to assess the awareness of COVID-19 among the food handlers at the family level before cooking. The survey results showed that out of 224 respondents, 88.39 per cent of respondents took the precaution of wearing a mask, maintaining social distance, carrying a sanitizer and a shopping bag. The data on hand washing revealed that about 212 (94.64%) respondents mentioned of washing hands before handling food. Again, out of 212 respondents who washed their hands mentioned that 204 (96.22%) washed hands with soap/liquid soap and water. About 209 (93.3%) of respondents reported of cleaning the groceries and 48 per cent of food handlers used water thoroughly, 14 per cent sponge with water and 39 per cent sponge with sanitizer respectively. Survey revealed 87.5 per cent food handlers washed milk packets after buying. About 94.2 per cent i.e. 211 respondents reported of cleaning fruits and vegetables. Out of the 211 respondents, 41.71 per cent of respondents reported of washing fruits and vegetables thoroughly in water. Around 36.49 per cent of food handlers reported of soaking fruits and vegetables in salt solution, 4.74 per cent in surf solution and 12.8 per cent in lemon water/vinegar respectively. It was observed that 94.2 per cent washed hands after handling food with soap and water. Although majority of the food

handlers followed safety measures in food handling yet there is an urgent need to aware on hand washing, duration of hand washing, use of proper agents in washing groceries, fruits and vegetables, etc.

Keywords: COVID-19; novel coronavirus; family based food handlers; hand hygiene; food handling

INTRODUCTION

Corona viruses which are recently discovered as novel coronavirus or COVID-19 are a large family of viruses which may cause illness in animals or humans. The virus is not transmitted through food which is cooked safely but can be transmitted through food products as the virus can stay on surfaces of the food products for several days. In humans, COVID-19 causes respiratory infections ranging from the common cold to more severe diseases which if not taken care may lead even to death.

The World Health Organization (WHO) declared coronavirus disease as a pandemic on March 11, 2020. ⁽¹⁾ After the announcement, India as well the world is facing an unprecedented threat from the COVID-19 pandemic. World Health Organization (WHO) is guiding the community regarding the introduction of physical distancing measures as one of the ways in which transmission of the disease can be reduced. In order to maintain social distancing, schools, institutions, business, travel, etc. are being closed but places like

grocery shops, vegetables, non-vegetarian items, etc. are open as people have to survive in the current pandemic situation. Maintaining the movement of food along the food chain is an essential function to which all stakeholders along the food chain need to contribute. It is highly unlikely that people can contract COVID-19 from food or food packaging. COVID-19 is a respiratory illness and the primary transmission route is through person-to-person contact and through direct contact with respiratory droplets generated when an infected person coughs or sneezes. There is no evidence to date of viruses that cause respiratory illnesses being transmitted via food or food packaging. Coronavirus cannot multiply in food and require an animal or human host to multiply. But precautions regarding purchasing of food item and cleaning them after buying is utmost essential as recent research evaluated the survival of the COVID-19 virus on different surfaces and reported that the virus can remain viable for up to 72 hours on plastic and stainless steel, up to four hours on copper, and up to 24 hours on cardboard. ⁽²⁾ In this context, there is a prerequisite that along with grocery store owners, salesman and vendors, the consumers need to follow hygiene practices, wear mask, wash hands frequently, maintain social distancing, use sanitizer, wash the food items properly, dry them, etc. before using the food items for cooking. Hence, it is important to assess the knowledge of the food handlers on safe handling of food so that awareness on the importance of maintaining good hygienic practices in purchasing and preparation of food can be incorporated in our lifestyle for ensuring optimal immune function and prevent occurrence of COVID 19 pandemic. The objective of this study is to assess the awareness of COVID-19 among the food handlers at the family level before cooking. The results may help to develop intervention strategies in changing behaviour of people in following the best practices on safe handling of food to remain healthy in the family.

MATERIALS AND METHODS

This survey was conducted among Indian respondents staying in India as well as abroad. The survey was prepared in the form of an online form and was sent to 450 respondents in different age groups of both sexes from April 20 – 23, 2020. A total of 224 respondents completed the survey with a response rate of 49.78 per cent. Only the food handlers at the family level were asked to respond to the questionnaire. The self-administered questionnaire consisting of socio-demographic questions and 12 questions based on knowledge on safe handling of food.

RESULTS

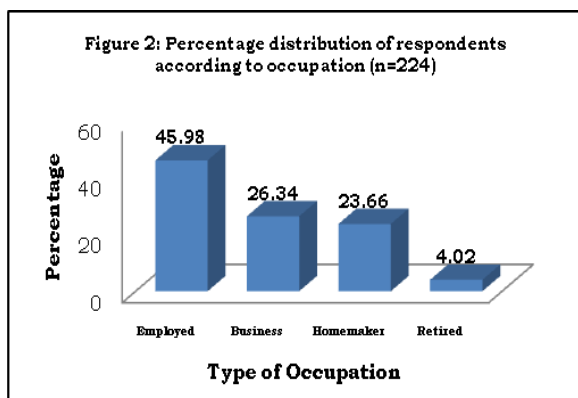
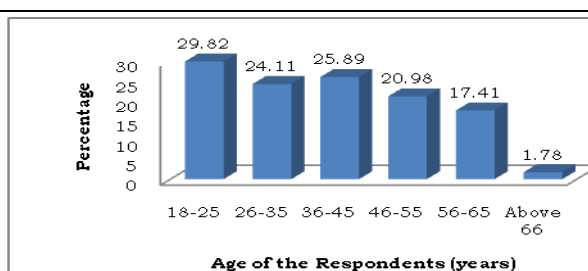
A total of 224 respondents who are handling food at the family responded to the survey. Out of 224 respondents, 169 respondents were from India and 55 were Indian residents residing in Germany, USA, UAE and UK. From India the respondents belonging to Arunachal Pradesh, Assam, Bihar, Karnataka, Manipur, Mizoram, Odisha, Uttar Pradesh, New Delhi, Sikkim, Haryana, Punjab and West Bengal were included in the survey. The survey covered 166 (74.1 %) females and 58 (25.9 %) male respondents who were handling food in the family. The survey included respondents in the age range of 18 years to 66 years above (Table 1).

The data revealed that about one fourth of the respondents were in the age range of 26 to 35 years (24.11%) and 36 to 45 years (25.89%) respectively. About 20.98 per cent and 17.41 per cent were in the age range of 46 to 55 years and 56 to 65 years respectively. The percentage of respondents who handled food in the age group of 18 to 25 years was 9.82 per cent and very few (1.78%) handled food in the age of 66 years and above (Figure 1). Data revealed that out of 224 respondents, 103 (45.98%) of respondents were employed, 59 (26.34%) were doing business, 53 (23.66%) were homemakers and only nine (4.02%) were retired (Figure 2).

Table 1: Distribution of age of the Respondents (in years)

Age (in years)	Respondents (n/%)
18-25	22 (9.82)
26-35	54 (24.11)
36-45	58 (25.89)
46-55	47 (20.98)
56-65	39 (17.41)
Above 66	4 (1.78)
Total	224 (100)

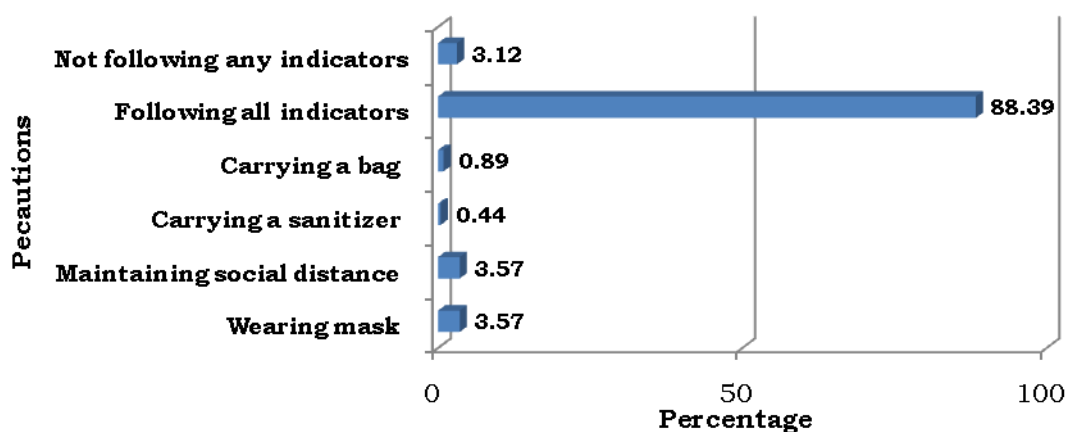
Figure 1: Percentage Distribution of Respondents (in years, n=224)



Since the disease can spread from person to person through small droplets from the nose or mouth, it has become mandatory to wear masks whenever a person is stepping out of the house. It is also said that the virus spreads when a person with COVID-19 coughs or exhales and the droplets may stick to the food items, hence using a sanitizer frequently before touching

any groceries or after buying grocery items is very important. The CDC recommends alcohol-based hand rub (ABHR) in most situations. ⁽³⁾ Moreover, it is becoming essential to carry a shopping bag from home itself so that it can be washed after use. COVID-19 can spread by touching food items/ groceries and then touching their eyes, nose or mouth. People can also catch COVID-19 if they breathe in droplets from a person with COVID-19 so it is important to maintain a social distance of more than 1 meter (3 feet) while buying any food items. Hence data was collected on the knowledge of the food handles on the precautions to be taken before stepping out to buy groceries, non-vegetarian items, fruits and vegetables. Data depicts (Figure 3) that out of 224 respondents, 88.39 per cent of respondents took the precaution of wearing a mask, maintaining social distance, carrying a sanitizer and a shopping bag.

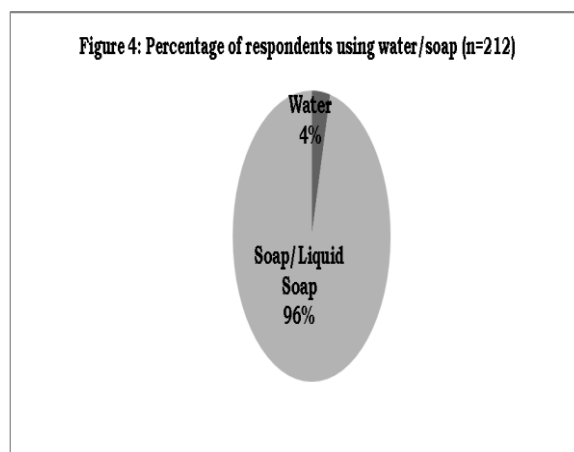
Figure 3: Percentage of respondents following the precautions while buying food items (n=224)

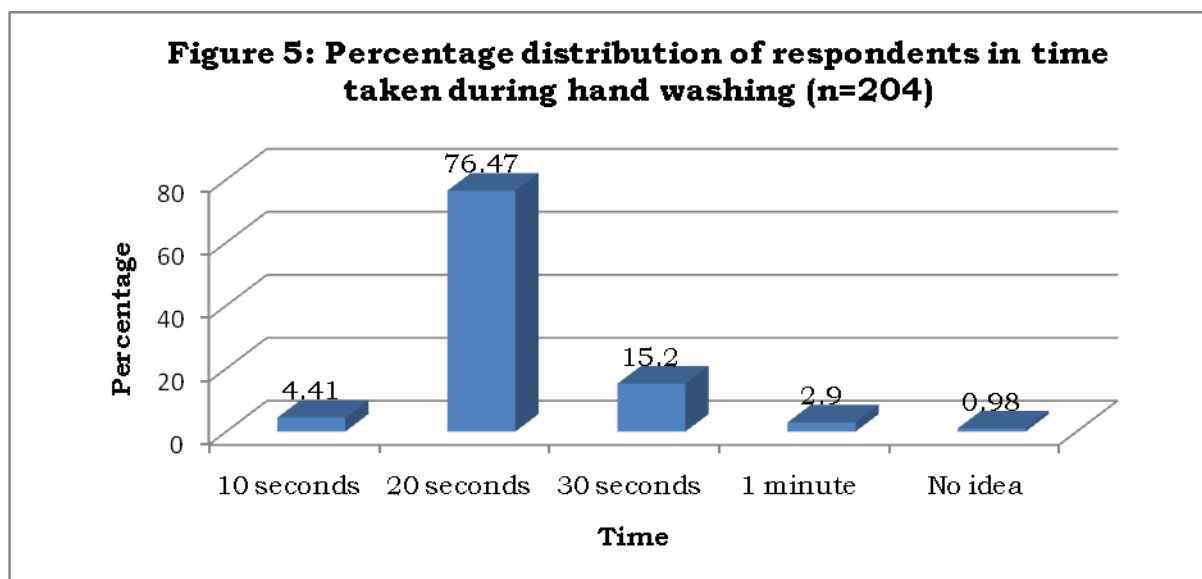


The remaining 26 respondents mentioned of any one or none of the precautions during purchasing food items. About 3.57 per cent each respondents took the precaution of wearing mask and maintaining social distance only. Very few viz. 0.44 per cent and 0.89 per cent of food handlers took the precaution of carrying a sanitizer and a shopping bag respectively. Using an alcohol-based sanitizer and rubbing the hands with the sanitizer helps in killing the viruses that may be on your hands. A small percentage of 3.12 per cent reported of taking no precautions taken while purchasing food items. This small percentage may not be aware of the precautions to be taken while going outside and to protect from the pandemic.

Another important precaution apart from using alcohol based hand sanitizer is hand washing. Cleaning of the hands frequently and thoroughly with soap and water can prevent food handlers from the attack of COVID 19. However, hand washing practices should be done in a correct way and then only it will help in preventing the spread of infection. The WHO “Five Moments of hand hygiene” defines key moments when healthcare providers must carry out hand hygiene. (4) The steps of hand washing start from wetting hands with water, applying soap, rubbing all over the hands for at least 20 seconds, between fingers, back of hands, base of thumbs, back of fingers, finger nails, wrists and then rinsing well with safe water and drying the hands with a clean towel. Use of safe water in washing hands and cleaning food items has become very important and pertinent during this pandemic. World Health Organization (2014) recommends hand washing with ash if soap is not available in emergencies. Use of ash is common in rural areas and many studies reveal that ash is as effective as soap

for removing pathogens. The data on hand washing revealed that about 212 (94.64%) respondents mentioned of washing hands before handling food. The remaining 12 (5.36%) mentioned that they do not wash hands before food handling. Again, out of 212 respondents who washed their hands mentioned that 204 (96.22%) washed hands with soap/ liquid soap and water and the remaining 3.77 per cent (8 respondents) washed only with water (Figure 4). Washing hands with soap and water and for 20 seconds is important as then only the germs/ viruses are killed. So the question on for how long the respondents washed their hands was put. Figure 5 depicts that out of 204 respondents, 76.47 per cent mentioned of washing hands with soap and water for 20 seconds, 15.2 per cent for 30 seconds and 2.9 per cent for one minute respectively. About 4.14 per cent mentioned of washing hands with soap and water for 10 seconds and 0.98 per cent reported of having no knowledge on the length of time for hand washing. The recommended hand hygiene technique for visibly soiled hands is hand washing with soap and water for at least 20 seconds with the whole process lasting for up to 40-60 seconds. (5)

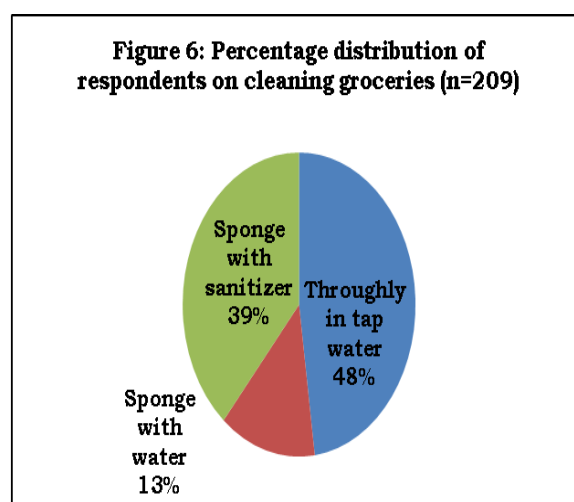




As mentioned earlier about the survival of the COVID-19 virus on different surfaces, cleaning of groceries even if packed properly after buying has become important. The survey showed that about 209 (93.3%) of respondents reported of cleaning the grocery packets after buying from market and remaining 15 (6.7%) did not clean the groceries. Out of 209 respondents, 48 per cent of food handlers used water thoroughly to wash the grocery packets, 14 per cent sponge with water and 39 per cent sponge with sanitizer respectively after buying from the market/store (Figure 6). Along with groceries, knowledge regarding cleaning of milk packets was assessed. It may be mentioned that out of the total respondents of 224, 87.5 per cent reported of washing the milk packets in water and 12.5 per cent respondents did not wash milk packets after purchasing.

Along with cleaning of grocery and milk packets, washing of fruits and vegetables thoroughly in tap water is important as mentioned by Food Safety Standards Authority of India (FSSAI).⁽⁶⁾ Some other ways of cleaning fruits and vegetables is by soaking in diluted vinegar, salt or lemon water for few hours and then leaving to dry before storing. The same can be followed for fish and meat before cooking and storing. Prisma⁽⁷⁾ in a study on

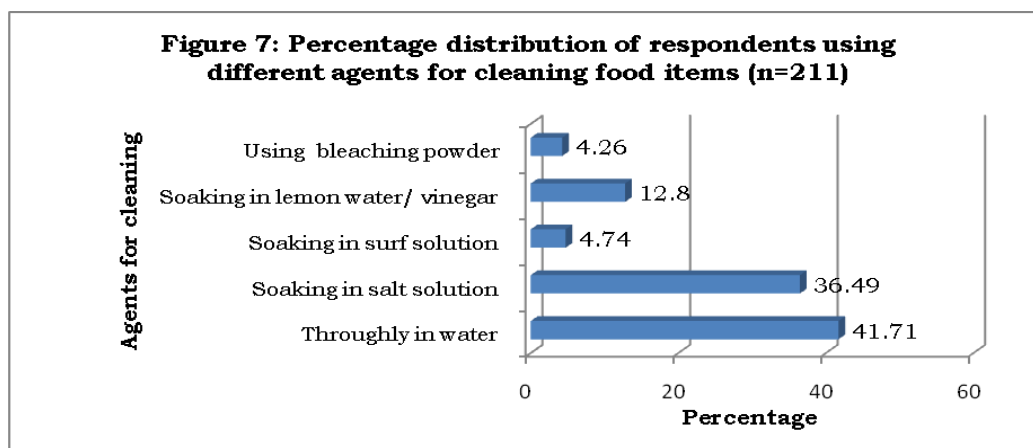
behavioral of hand washing with soap in Peri-urban and Rural Areas of Peru states found that 20 percent of the individuals washed their hands before handling food or before coming into contact with food and only six per cent used soap. The study also observed that mothers were inclined to better hand washing practices related to faeces than washing hands with soap and water before coming into contact with food.



Present survey revealed that about 94.2 per cent i.e. 211 respondents reported of cleaning fruits and vegetables and only 5.8 per cent did not clean fruits and vegetables before storing. Out of the 211 respondents, 41.71 per cent of respondents reported of washing fruits and vegetables

thoroughly in water. Around 36.49 per cent of food handlers reported of soaking fruits and vegetables in salt solution, 4.74 per cent in surf solution and 12.8 per cent in lemon

water/ vinegar respectively. About 4.26 per cent mentioned of using bleaching water in washing fruits and vegetables (Figure 7).



Soaking in surf solution is debatable and soaking in bleach is not recommended as it will hamper the nutrients present in fruits and vegetables. (8) Drying of fruits and vegetables before storing is an essential step to keep the fruits and vegetables safe and fresh. In this context, 87.94 per cent of respondents reported of drying the fresh fruits and vegetables before storing and 12.05 per cent did not dry them before storing. FSSAI also recommended washing of hands with soap and water after cleaning food items. It was found that out of 224 respondents, 211 (94.2%) reported of washing hands after handling food and 13 (58%) respondents did not wash their hands.

DISCUSSION

The percentage of respondents who handled food in the age group of 18 to 25 years was 9.82 per cent and very few (1.78%) handled food in the age of 66 years and above. Since COVID 19 can spread from person to person through small droplets from the nose or mouth, it has become mandatory to wear masks, use sanitizer, maintain social distance of more than three feet and carry a shopping bag before stepping out of the house to buy food items. The survey results showed that out of 224 respondents, 88.39 per cent of respondents took the precaution of wearing

a mask, maintaining social distance, carrying a sanitizer and a shopping bag. Another important precaution which has gained importance to prevent the pandemic is using alcohol based hand sanitizer is hand washing. However, the data on hand washing revealed that about 212 (94.64%) respondents mentioned of washing hands before handling food. Again, out of 212 respondents who washed their hands mentioned that 204 (96.22%) washed hands with soap/ liquid soap and water and the remaining 3.77 per cent (8 respondents) washed only with water. Washing hands with soap and water and for 20 seconds is important as then only the germs/ viruses are killed. Out of 204 respondents, 76.47 per cent mentioned of washing hands with soap and water for 20 seconds followed by 15.2 per cent for 30 seconds and 2.9 per cent for one minute respectively. The recommended hand hygiene technique for visibly soiled hands is hand washing with soap and water for at least 20 seconds with the whole process lasting for up to 40-60 seconds (5). Cleaning of groceries even if packed properly after buying is very important as the virus stays on the surface of the food items for long hours, About 209 (93.3%) of respondents reported of cleaning the groceries and 48 per cent of food handlers used water thoroughly, 14 per cent sponge

with water and 39 per cent sponge with sanitizer respectively. Along with groceries, knowledge regarding cleaning of milk packets was assessed. It may be mentioned that out of the total respondents of 224, 87.5 per cent reported of washing the milk packets and 12.5 per cent respondents did not wash milk packets after purchasing. As mentioned by FSSAI, cleaning of fruits and vegetables thoroughly is very important during the pandemic. The survey revealed that about 94.2 per cent i.e. 211 respondents reported of cleaning fruits and vegetables. Out of the 211 respondents, 41.71 per cent of respondents reported of washing fruits and vegetables thoroughly in water. Around 36.49 per cent of food handlers reported of soaking fruits and vegetables in salt solution, 4.74 per cent in surf solution and 12.8 per cent in lemon water/ vinegar respectively. About 4.26 per cent mentioned of using bleaching water in washing fruits and vegetables which is not recommended. In the context of drying fruits and vegetables before storing, 87.94 per cent of respondents reported of drying the fresh fruits and vegetables before storing and 12.05 per cent did not dry them before storing. Data also revealed that, out of 224 respondents 211 (94.2%) reported of washing hands after handling food and 13 (58%) respondents did not wash their hands.

CONCLUSIONS

Food handlers in the present survey showed having adequate knowledge in safe handling of food. About 88.39 per cent of food handlers took precautions while going out to purchase food items and after purchase of food items like groceries, fruits and vegetables. Majority of the food handlers cleaned the food items before storing. Although majority of the food handlers followed safety measures in food handling yet there is an urgent need to aware on hand washing, duration of hand washing, use of proper agents in washing fruits and vegetables. Safe food handling

has become pertinent with the outbreak of COVID-19 pandemic so that behavior of food handlers changes and they adopt good practices required to prevent from the disease.

REFERENCES

1. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. (2020). Accessed: Mar 19, 2020: <https://www.who.int/dg/speeches/detail/who-directorgeneral-s-opening-remarks-at-the-media-briefing-on-covid-19---11>
2. WHO COVID-19 and Food Safety: Guidance for Food Businesses: interim guidance April 7, 2020
3. Frequently asked questions about hand hygiene for healthcare personnel responding to COVID-2019. (2020). Accessed: March 20, 2020: <https://www.cdc.gov/coronavirus/2019-ncov/infection-control/hcp-hand-hygiene-faq.html>.
4. Modi PD, Kumar P, Solanki R, Modi J, Chandramani S, Gill N: Hand hygiene practices among Indian medical undergraduates: a questionnaire-based survey. *Cureus*. 2017, 9:e1463. Accessed: March 25, 2020: 10.7759/cureus.1463
5. Hand hygiene: why, how & when . (2020). Accessed: March 20, 2020: https://www.who.int/gpsc/5may/Hand_Hygiene_Why_How_and_When_Brochure.pdf.
6. FSSAI. COVID 19. <https://fssai.gov.in/cms/coronavirus.php>
7. Prisma, 2004. Behavioral Study of Hand washing with Soap in Peri-urban and rural areas of Peru, prepared under EHP Project 26568/CESH.PERU HAND WASHING.Y5
8. Courtney Shea. Should You Wash Your Groceries? COVID-19 Food-Safety Myths, Busted. <https://www.refinery29.com/en-us/2020/04/9650670/should-i->

How to cite this article: Goswami RG. Knowledge on safe handling of food during COVID-19 pandemic: a questionnaire based survey. *International Journal of Research and Review*. 2020; 7(5): 103-109.
