



Public Health

COVID-19, Work-Related Health and Safety in Supermarkets: Prevention and Response Plan

COVID 19, Santé et sécurité au travail dans les supermarchés : plan de prévention et de riposte

Nsounfon Abdou Wouoliyou^{1*}, Massongo Massongo¹, Zambo Jean Berthelot^{2,3}

ABSTRACT

The COVID-19 pandemic is a major public health problem with societal and economic consequences on a worldwide scale thereby having a significant impact on all aspects of our lives. Because of the great number of visits they face, supermarkets are an important space for the spread of the virus to both customers and employees. In order to remedy this, numerous rearrangements are observed in these areas. Thus, a simplified and applicable prevention plan at the individual and collective levels is necessary in the process of progressive recovery of the economy.

This manuscript presents an example of the functioning of a supermarket in the capital city of Cameroon and the risks of contracting the Coronavirus infection. It proposes some solutions to reduce the risk of infection with SARS-CoV 2 and thus, to curb its spread thereby enabling a better safety for the workers and customers in supermarkets. The proposal for this response plan was inspired by some failures observed in a mini supermarket in Cameroon. However, these solutions can be adapted and better improved depending on the context.

1. Department of Internal Medicine and Specialties, Faculty of Medicine and Biomedical Sciences, the University of Yaoundé I, Yaoundé, Cameroon

2. Department of Public Health, Faculty of Medicine and Biomedical Sciences, the University of Yaoundé I, Yaoundé, Cameroon

3. Department of Public Health, The Nkolondom Higher Institute of Medical Technology, Yaoundé, Cameroon

* Corresponding author:

NSOUNFON Abdou Wouoliyou, MD, MSOSH
Respiratory & Occupational Medicine
Faculty of Medicine and Biomedical Sciences/ The University of Yaoundé I, Cameroon

Email: nsounfonab@gmail.com

Phone number: +237698672389

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INTRODUCTION

The COVID-19 pandemic is a major public health problem due to its rate of spread, its morbidity and mortality, and its societal and economic consequences on a worldwide scale, thus having a substantial impact on all aspects of our lives [1–4]. Supermarkets, because of the number of people found in especially during a pandemic, constitute a key space for the spread of the virus [5], both to customers and employees. Indeed, many cases of contamination and death have been reported in connection with practice in supermarkets [6–8]. In order to curb this increased contamination,

numerous rearrangements have been observed in these areas, in line with the barrier measures recommended by the World Health Organization (WHO) [5]. A simplified and applicable prevention plan at the individual and collective levels is necessary in the progressive recovery process of the economy. We present an instance of how a supermarket works, the risk of contracting the Coronavirus infection and propose solutions to minimise it in the capital city of Cameroon.

BACKGROUND INFORMATION

This subpart provides some preliminary information on the issue. It takes into account the taxonomy, the transmission modes and some prevention measures.

Taxonomy

The virus which is responsible for the transmission of COVID-19 is one from the Coronaviridae family formerly known as 2019-nCoV (new coronavirus 2019). This is because the first cases were described in 2019 in the city of Wuhan. The ICTV (International Committee on Taxonomy of Viruses) announced on February 11, 2020 that the name of the new virus would be SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) [9,10]. This name was chosen because the virus is genetically related to the coronavirus responsible for the 2003 SARS outbreak [10]. On the same date, the WHO announced that the name of this new disease would be "COVID-19" [9].

Transmission modes

The virus is spread by inhaling the sputters of an infected person when he/she speaks, coughs or sneezes [11,12]. It can also be transmitted through contaminated hands on contact with secretions from a surface and then carried to the mucous membranes (mouth, nose or eyes) [11–15]. The virus can survive for several hours to a few days on

inert surfaces, be it baskets / carts or foods packaging [16–18]. However, according to the WHO and many authors, it is unlikely that SARS-CoV-2 virus can be transmitted from food or food packaging [19–22].

Prevention measures

Numerous measures have been recommended by the WHO to curb the spread of COVID-19 [23]. These measures include, among others:

- Respecting hygienic measures, which include:
 - Regular hand washing with soap and water or disinfection with an alcohol-based sanitizer
 - Respiratory hygiene: covering one's mouth and nose with the bend of the elbow or with a tissue when coughing or sneezing, and immediately throwing the tissue afterwards in a closed trash can and washing one's hands with water and soap or disinfecting them with an alcohol-based sanitizer .
- Respecting social distancing measures, by maintaining a safe distance of at least one meter from other persons.
- Compulsory wearing of a mask.
- Staying home as much as possible.

PRESENTATION OF THE LOCAL SUPERMARKET

As the title suggests, this article is interested in presenting the supermarket that was observed and its functioning.

Description

It is a mini supermarket in which mainly processed foodstuffs are marketed. Structurally, it has veranda and two rooms. The structure of this supermarket is shown in **Figure 1** below.

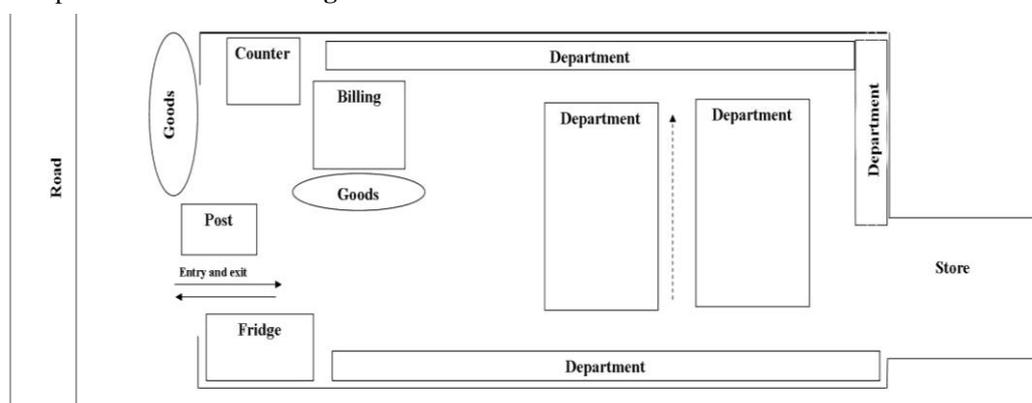


Figure 1: The supermarket plan

As can be seen,

- The veranda is used for the display of certain foodstuffs such as rice, fine granulated sugar, flour, juice and many others.
- The entrance to the supermarket is divided in two parts by a post. One way is reserved for customers (entry and exit). The second way is occupied by the above-mentioned foodstuffs.
- The main room is for displaying most of the supermarket's foodstuffs. It has several departments: three peripheral departments and two central departments. At the entrance to the main room on the left is the counter and billing.
- The second room serves as a store.

Functioning

The supermarket employs five people: the manager, a cashier, one lady in charge of billing and two guides. The manager coordinates the activities of the supermarket and controls the renewal of stocks. Guides give the orientation and advise customers and pack up the foodstuffs when paid.

Customer itinerary

This supermarket does not have a specific itinerary for customers. The observation made us highlight the following itinerary:

- Entrance to the supermarket;
- Free or guided service through the supermarket;
- Carrying of foodstuffs to the billing table, mainly by the customer or the guide by hand or using a basket;
- Billing foodstuffs using bar codes on the label;
- Payment at the counter;
- Return to billing for foodstuffs packing-up by the guide or the person in charge of billing, after verifying the bill;
- Supermarket exit.

FAILURES OBSERVED IN THE SUPERMARKET

Many deficiencies have been observed in the supermarket that may facilitate the spread of the virus:

- Single door for entry and exit. This increases the risk of close contact amongst customers;
- Lack of a disinfection system or hand washing kits at the entrance;
- Two-way customer path: it increases the risk of inter-customer or customer-employee contamination and non-respect of distancing measures;
- Proximity between the different departments (especially the counter and billing) and with customers. This jeopardizes the safety distance;
- Possibility for customers to touch several products before making their choice. It increases the risk of foodstuffs contamination;
- Unregulated movement or flow of customers within the supermarket;
- No obligation to wear a mask for both customer and supermarket staff;
- Hand sanitizer only available at the counter.

All of these deviations expose both staff and customers to an increased risk of COVID-19 contamination, the factors of which are presented in **Table I**.

Table I: High-risk situations of Covid-19 contamination in the supermarket according to contamination mechanism in Yaounde, Cameroon 2020

Categories	High-risk situations of the virus inhalation	High-risk situations of close contact with the virus
Customers	Irregular wearing of mask	Possibility of touching contaminated foodstuffs
	Non-respect of safety distance between customers	Spread through infected shoes and clothes
Guides/advisors	Proximity with customers	Spread through infected shoes and clothes: risk of spreading through public and family transport means
	No mask	During the packing-up foodstuffs process
Billing	Proximity between the cashier and the customers	Spread through infected shoes and clothes; permanent movement within the supermarket
	Seat in low position: high risk of contamination linked to the trajectory of sputters issued by customers	When registering and during the foodstuffs billing process
Cashier	No mask and lack of barrier with customers	Spread through infected shoes and clothes
	Proximity with the billing table and the customers	Permanent contact with money
Manager	No mask	Spread through infected shoes and clothes
	Proximity with the employees	Checking on the computer through keyboard and control of stock
	No mask	Spread through infected shoes and clothes

COVID-19 PREVENTION PLAN IN THE SUPERMARKET

The COVID-19 infection prevention plan involves adopting and respecting a number of measures by both employees and customers [5]. These measures mainly consist in setting up a disinfection system and defining a clear customer circuit as shown in **figure 2**.

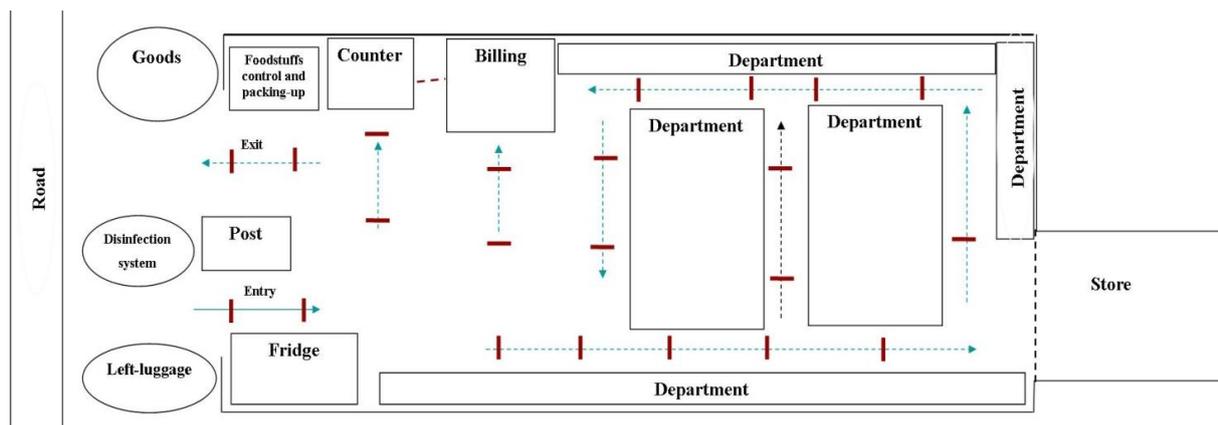


Figure 2: Supermarket reorganization and clear customer circuit supermarket

Other measures must also be prescribed and respected at the individual level (employees / customers) under the control of the manager. The response plan must simultaneously ensure safety for employees, foodstuffs and customers. In this regard, the following general and specific measures are recommended:

Talking about general measures, they include:

- Defining the one-way customer itinerary;
- Creating an output different from the input;
- Systematic disinfection of the floor at least two times a day and at the end of sales activities;
- Putting a footbath and a hand washing system with flowing water and sanitizer at the entrance to the supermarket;
- Putting up a poster at the entrance of the supermarket which sensitizes about the danger of COVID-19 and which indicates the systematic disinfection of hands;
- Putting up a poster indicating the customer's circuit;
- Installing a left-luggage system at the supermarket entrance;
- Installing a water supply point (water and soap) at the entrance to the supermarket for systematic hand washing before entering and when leaving the supermarket or, failing that, a hand sanitizer.

Regarding employees,

- Maintaining a reasonable distance between the billing and the counter;
- Systematic wearing of masks by employees;
- Putting one of the guides in charge of the bill control and foodstuffs packing-up;
- The second guide in charge of orienting and selecting customer foodstuffs (customers should not touch the foodstuffs in an untimely way);
- Enforcing the use of shopping baskets / trolleys in the supermarket and ensuring their disinfection.

Foodstuffs

- Placing the window panes or wire-netting on the departments;
- Prohibition of handling foodstuffs by customers.

Customers

- Putting sanitizers at the level of each department;
- Recommending customers to wear a mask when entering the supermarket;
- Systematically wearing masks and proposing a mask point of sale (or free of charge) at the entrance to the supermarket;
- Adding labels on foodstuffs to better orient customers;
- Proposing customers a home delivery service payable on delivery. With regard to this, two other persons should be recruited for the task;
- Marking distance between customers on the ground.

CONCLUSION

A supermarket is a place where the population converges and can be a significant place of contamination of COVID-19. This work proposes some solutions to reduce the risk of SARS-CoV 2 infection in supermarkets and thus, curb its spread. The proposal for this response plan was inspired by some failures observed in a mini supermarket in Cameroon. However, these solutions can be adapted and better improved depending on the context. These measures will allow better safety in supermarkets for both workers and customers faced with of COVID-19 and thus strengthen prevention and control measures for this pandemic.

Conflicts of interest

The authors declare no conflicts of interest.

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