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Prevention measures for COVID-19 in retail food stores in Braga, Portugal

COVID-19 is the designation of the World Health Organization for the infectious disease caused by the new coronavirus, which can cause severe respiratory infection, such as pneumonia.[1] The main modes of transmission of COVID-19 are: 1) close contact with people infected by the virus or 2) contact with contaminated surfaces or objects. Transmission takes place through droplets that are expelled when a person with COVID-19 coughs, sneezes or speaks, or through contact with contaminated hands that touch the eyes, nose or mouth of a person (hands are easily contaminated by contact with objects or surfaces where droplets from an infected person have landed).[2] Knowing that close contacts can contribute to increasing the spread of the infection, breaking these transmission chains is essential.

In this context, the Portuguese Directorate-General of Health (DGS) has been issuing guidelines on the public health measures to be adopted by public service establishments to prevent the spread of the virus.[3] Briefly, the best practices recommended by DGS include the following: guarantee that checkout counters maintain physical distance of 1 m; post signage on the floor to help customers maintain adequate social distancing; create physical barriers between employees and customers, in order to avoid ''excessive approximation between individuals''. As measures for cleaning and sanitizing, DGS recommends disinfecting the whole store area at least once a day; and frequently cleaning (at all hours) the high-touch surfaces, such as ticket dispenser machines or ATMs. Moreover, alcohol-based solutions should be provided in strategic locations.[3] This observational study aims to describe the measures adopted to prevent the transmission of COVID-19 by retail food stores in the municipality of Braga, Portugal.

To this end, a researcher from the Institute of Education of the University of Minho designed and implemented a descriptive observational study, carried out between 5th and 8th April 2020, with a convenience sample of eight retail food stores in the municipality of Braga (Portugal). Observations and registries were made by three researchers in different types of stores (mini markets, supermarkets, and hypermarkets). Each store was observed once. Researchers were, on average, 10 min in each outlet. Data was collected by filling out a previously prepared form, which included the following variables: I. Measures adopted outside the store (signs of disinfection of the floors; disinfection of shopping carts/baskets; measures to prevent overcrowding; existence of signage that encourages employees and customers to practice health safety procedures such as social distancing and wearing face mask); II. Measures adopted inside the store (indication of the necessary physical distance between people; provision of hand sanitizer, gloves, or other personal protective equipment); III. Employees (cashier: use of a visor or a mask/glasses, use of gloves, existence of acrylic separator walls at counters; store operators: use of a visor or a mask, use of gloves); IV. Customers (gender; age group; use of a surgical or handmade face mask, or a scarf; use of a visor/other; use of gloves).

Six of the eight establishments observed showed signs of disinfection of the floors. Four of them disinfected shopping carts/baskets; almost all employed measures to prevent overcrowding ($n = 7$) and all of them displayed signage and warnings about COVID-19. As to measures adopted inside the store, most had indications of the necessary physical

distance between people ($n = 7$); three provided hand sanitizers, only one provided gloves. Regarding employees, in four of the eight stores observed the cashiers wore a visor or mask/glasses and gloves; in seven stores there was an acrylic separator wall between them and the customers. Store operators wore gloves in three out of eight outlets, but in only two cases they used a visor or a mask. Of the 78 customers observed, 47 (60.3%) were women and the majority were between 18 and 65 years old ($n = 60$; 76.9%). In the total sample, 26.9% ($n = 21$) used a surgical mask and 0.05% ($n = 4$) used a handmade mask or scarf. No customer wore a visor. Gloves were the most commonly used equipment by customers ($n = 25$; 32.1%).

To sum up, compliance with prevention measures recommended to avoid COVID-19 contamination in retail food stores in Braga varied widely between outlets in April 2020. There were examples of excellent practice, but also of poor practice. Only one store met all recommended standards. The situation is more worrying in mini markets, where none of the recommendations were being followed. The main shortcomings, in general, were the absence of protective equipment for the employees, and lack of hand sanitizer for customers. According to recent information from the European Centre for Disease Prevention and Control,[4] one of the best preventive practices to reduce the transmission of COVID-19 is the generalized use of face masks as a complementary measure to safety distance, proper education being fundamental for their safe use.

Ethical disclosures

Protection of human and animal subjects

The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data

The authors declare that the procedures followed were in accordance with the regulations established by the Commission for Clinical and Ethical Research and in accordance with the Helsinki Declaration of the World Medical Association.

Right to privacy and informed consent

The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

Conflict of interest

The authors have no conflicts of interest to declare.

Authors' contributions

Precioso conceived this study, collected the data, designed, and carried out statistical analysis. Samorinha and Precioso wrote the first draft of the manuscript. Samorinha carried out statistical analysis and revised the manuscript critically. All authors contributed substantially to the interpretation of data, critical discussion, and revision of the manuscript, and approved its final version.

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Pulmonary artery thrombosis in COVID-19 patients

Dear Editor,

Arising in China in the winter of 2019, COVID-19 (caused by the SARS-CoV-2 virus) has caused a global pandemic and severely stressed medical systems across the world.

Although knowledge about this novel coronavirus is still emerging, the most common reason for hospitalization of COVID-19 patients is severe respiratory distress.[1]

COVID-19 has been accurately described as the cause for a proinflammatory and hypercoagulable state with marked elevations seen in Lactate Dehydrogenase, Ferritin, C-reactive protein, D-Dimer, and Interleukin levels.[2]

The inflammatory response, including production of inflammatory cells and cytokines, induces a procoagulant effect and diffuse endothelial damage that predisposes thrombotic vascular lesions and Disseminated Intravascular Coagulation (DIC).[3]

D-Dimer is related to the severity of the disease and an increased value is associated with the worst. prognosis. Retrospective studies demonstrated that patients admitted to