

AN OVERVIEW OF THE MANAGEMENT OF COVID-19 IN SWIMMING POOLS, BEACHES, AND HOT SPRINGS IN EUROPE, CANADA, AND COLOMBIA

YULY SÁNCHEZ¹, MEHRAB MEHRVAR², LYNDIA MCCARTHY³, EDGAR QUIÑONES⁴, LUIS RODRÍGUEZ CHEU⁵, JAIRO ROMERO⁶

Escuela Colombiana de Ingeniería “Julio Garavito”, Bogotá D.C., Colombia

Ryerson University, Toronto, Canadá. Faculty of Engineering, Universidad de Cartagena, Cartagena de Indias, Colombia.

RESUMEN

Palabras clave:

Aguas termales, COVID-19, medidas preventivas, piscinas, playas.

La pandemia de COVID-19 (SARS-CoV-2) obligó a Colombia a promulgar una legislación preventiva obligatoria desde finales de marzo según lo establecido por el Decreto 749 (Mayo 28). Adicionalmente, el Ministerio del Interior señaló, (artículo 5), “el funcionamiento de gimnasios, piscinas, spas, sauna, spas turcos, canchas deportivas, polideportivos, parques mecánicos de diversiones y el uso de parques infantiles está prohibido”. Este artículo presenta las estrategias de manejo de COVID-19 en piscinas, playas y aguas termales como se detalla en Europa, Canadá y Colombia.

Cuando comenzó la pandemia, muchos alcaldes de Colombia ordenaron el cierre de todas las piscinas, playas y aguas termales. Actualmente, aún no se han presentado planes de manejo para la apertura de aguas termales, playas y piscinas. Sin embargo, la Asociación Europea de Parques Acuáticos presenta un plan de reapertura en dos etapas para que los gobiernos y las autoridades lo implementen (Asociación Europea de Parques Acuáticos E.V., 2020). Otros países incluidos China, Estados Unidos, Australia, Canadá y Austria están siguiendo medidas similares.

El gobierno de España presentó recomendaciones para la reapertura de playas y zonas de baño tras la crisis del COVID-19, basándose en informes de transmisión del SARS-CoV-2 en playas y piscinas (Consejo Superior de Investigaciones Científicas, 2020). El Gobierno de Alberta hizo las mismas recomendaciones.

Entre las medidas más representativas para prevenir la propagación del virus, las autoridades médicas de una variedad de gobiernos han recomendado colectivamente i) mantener rigurosas directivas de distanciamiento social y ii) la limpieza o desinfección diaria de superficies y áreas comunes.

¹ PhD Candidate, Escuela Colombiana de Ingeniería “Julio Garavito”, Bogotá, Colombia, yuly.sanchez@escuelaing.edu.co.

² Professor and Associate Chair, Graduate Studies, Department of Chemical Engineering, Ryerson University, Toronto, Canada, mmehrvar@ryerson.ca.

³ Professor, Department of Chemistry and Biology, Ryerson University, Toronto, Canada, l3mccart@ryerson.ca..

⁴ Professor and Director of PhD Program, Universidad de Cartagena, Cartagena, Colombia, equinonesb@unicartagena.edu.co.

⁵ Professor and Director of PhD in Engineering. Escuela Colombiana de Ingeniería “Julio Garavito”, Bogotá, Colombia, luis.rodriguez@escuelaing.edu.co.

⁶ Professor and Director of Center for Environment Studies. Escuela Colombiana de Ingeniería “Julio Garavito”, Bogotá, Colombia, jairo.romero@escuelaing.edu.co.

ABSTRACT

Keywords:

Beaches, COVID-19, hot springs, preventive measures, swimming pools.

The COVID-19 (SARS-CoV-2) pandemic forced Colombia to enact mandatory preventive legislation since the end of March 2020 as established by Decree 749 (May 28). Additionally, the Ministry of the Interior stated, (article 5), *“the operation of gyms, swimming pools, spas, sauna, Turkish spas, sport fields, sport centers, mechanical amusement parks and playgrounds is prohibited”*. This article presents management strategies of COVID-19 in swimming pools, beaches and hot springs as detailed in Europe, Canada, and Colombia.

When the pandemic began, many mayors in Colombia ordered the closure of all pools, beaches, and hot springs. Currently, official management plans have yet to be presented for the opening of hot springs, beaches and swimming pools. However, the European Association of Water Parks, presents a two-stage reopening plan for governments and authorities to implement (European Waterpark Association E.V., 2020). Other countries including China, United States, Australia, Canada and Austria are following similar measures.

The government of Spain presented recommendations for the reopening of beaches and bathing areas after the COVID-19 crisis subsided, based on reports of the transmission of SARS-CoV-2 in beaches and swimming pools (HCSR, 2020). The Government of Alberta (Canada) made the same recommendations.

Among the most representative management measures mandated to prevent the spread of the virus, medical authorities from a variety of governments have collectively recommended i) maintaining rigorous social distancing directives, and ii) daily cleaning or disinfection of surfaces and common areas.

I. INTRODUCTION

When the first case of SARS-CoV-2, or COVID-19, was confirmed in the Republic of Colombia on March of 2020, a containment phase was begun (March 6), followed by a quarantine strategy (March 20). The Ministry of Health and Social Protection, as promulgated by Resolution 385, declared a health emergency and adopted sanitary measures to prevent and control the spread of COVID-19 in the national territory and subsequently, to mitigate its effects. Additionally, Resolution 844 (May 26), extended the health emergency of Resolution 385, and ordered the continued quarantining of all citizens until August 31, with sanitary measures of isolation and preventative quarantine for people over 70 years of age (Ministry of the Interior, 2020). With Decree 749 (May 28), mandatory preventive

isolation was ordered for all inhabitants of the Republic of Colombia, by the Presidency of the Republic. Article 5 of this decree (paragraph No. 4) established a list of prohibitive activities, including *“gyms, swimming pools, spas, sauna, steam rooms, sports fields, sports centers, mechanical amusement parks and playgrounds”* (Ministry of the Interior, 2020).

When the pandemic began, many mayors in Colombia ordered the closure of all pools and hot springs, as a proactive measure to contain the spread of COVID-19. William Dau Chamat, mayor of Cartagena, suspended all maritime activities and prohibited the use of beaches for recreational use. Similarly, José Rodrigo Toro Montes, mayor of Santa

Rosa de Cabal, announced the temporary closure of the city's hot springs parks (RCN Radio, 2020). In Canada and other countries, the same measures were taken (CTV News Canada, 2020).

In addition, while Decree 990 (July 9) enabled a partial reopening to kick-start the economy for all the inhabitants of the Republic of Colombia, no reopening of swimming pools, spas, Turkish spas, saunas, mechanical amusement parks and playgrounds is allowed. (Ministry of the Interior, 2020).

Likewise, the Ministry of Habitat and Housing of Cundinamarca, published a guide with the measures to be implemented by administrators, staff and residents of residential complexes and housing developments for the containment of COVID-19. One of them restricts the use of swimming pools in closed complexes (Ministry of Habitat and Housing of Cundinamarca, 2020).

2. METHODOLOGY

This paper has endeavored to present a brief overview of the management of COVID – 19 in swimming pools, beaches and hot springs in Colombia, as well as in Europe and Canada.

Various references were consulted for this study, such as international journals and official websites of organizations including the World Health Organization, Global Wellness Institute, and Health Ministers of selected countries. Other sources included Investigations Centers and Colombian regulations were investigated such as: i) “preventive measures of COVID- 19 in swimming pools and hot springs”; ii) “preventive measures of COVID -19 in beaches”, and iii) “Colombian COVID-19 regulations”.

3. PREVENTIVE MEASURES FOR THE MANAGEMENT OF COVID-19

3.1. Overview

According to the United States Center for Disease Control and Prevention (CDC), there is no evidence

that the COVID-19 virus can be transmitted to people through water in swimming pools, hot tubs, or playgrounds. Furthermore, the proper functioning of these aquatic sites and the disinfection of water (with chlorine or bromine) should inactivate the virus (CDC, 2020).

The main route of transmission of SARS-CoV-2 at beaches, rivers, lakes and swimming pools is through human respiratory secretions or droplets that come out of a person's nose or mouth upon coughing, sneezing, or speaking and subsequently transmitted to other people (WHO 2020; SCSI, 2020).

The Spanish Higher Council for Scientific Research (HCSR) stated that in order to avoid microbiological contamination of water from bathers in swimming pools and spas, disinfection is to be widely implemented and the residual concentration of the disinfection agent will remain present in water, which should be enough for virus inactivation. (HCSR, 2020). Like the vapours generated by the water present in a spa or in a medicinal water facility, these will have the same disinfection characteristics as the bath waters of these facilities (SCSI, 2020).

Also, the Spanish Superior Council of Scientific Investigations (SCSI) recommends that in those cases in which the environment of the facilities is kept at high temperatures, such as in the case of saunas and steam baths, it is expected that due to the high temperature (> 60 °C), virus survival is reduced (SCSI, 2020).

Currently, there is no data on the persistence of SARS-CoV-2 in seawater. However, the dilution effect, as well as the presence of salt, are factors that probably contribute to a decrease in viral load and its inactivation (SCSI, 2020). Although there are no known published studies on the prevalence of viruses in the sand on beaches, the joint action of sea salt, solar ultraviolet radiation, and high sand temperatures creates a favourable environment for the inactivation of the pathogens. Lastly, SCSI does not recommend disinfecting the ground of natural

spaces with the usual procedures used for urban public spaces. And any form of disinfection of the beach sand must not harm the environment.

One of the possible ways of contamination of beaches and rivers are the effluents coming from the sewage treatment plants. Recent studies in the Netherlands have shown that the virus is present in wastewater, which has enabled the detection of SARS-CoV-2 genetic material in inlet waters of treatment plants (Randazzo et al., 2020).

Control of viruses and bacteria in recreational waters is accomplished with proper treatment, influenced by disinfection with chlorine or other disinfectants (WHO, 2006). The most frequently used chemical disinfectants include chlorine (hypochlorite or chlorinated isocyanurates), chlorine dioxide, bromochlorodimethylhydantoin (BCDMH), ozone, and ultraviolet (UV) radiation (with ozone and UV being used in combination with chlorine or bromine) (Barrera et al., 2006). Affected water treatment practices vary around the world, as do levels of chemicals that are currently considered acceptable to achieve adequate disinfection and reduce user discomfort (WHO, 2006). Additionally, several studies indicate that photo-inactivation occurs more rapidly in seawater than in freshwater due to its salinity (Nelson *et al.*, 2020).

The European Center for Disease Prevention and Control (ECDC) published a report on the efficacy of different disinfectants against different types of coronavirus (ECDC, 2020). It concluded that although there were no specific studies on the efficacy of these agents of disinfection against SARS-CoV-2 (COVID-19), the data obtained against other coronaviruses such as SARSCoV (SARS), suggest that the use of a 0.1% sodium hypochlorite solution (equivalent to a 1:50 dilution of a household bleach solution at a concentration of 5%) is effective for virus inactivation.

3.2. Swimming pools and Hot Springs

Europe: Currently, the European Waterpark Association of water parks and spas in Europe

is presenting a two-stage reopening plan for governments and authorities to implement (European Waterpark Association E.V., 2020). Other countries such as China, United States, Canada, Australia and Austria are following suit. This reopening plan by the European Waterpark Association includes the following:

Stage 1: Reopening of waterparks and spas with reduced visitor numbers.

- Affected ATMs protected by cough screens.
- Demarcate, at 1.5 m intervals, the pay area, sauna booths, in front of slides or other attractions, and restaurant tables. Only 2 people maximum at the tables (except for families).
- Only 2/3 of the invited lockers will be occupied (only one guest at a time).
- Saunas will not be enabled.
- In the self-service restaurant area, only drinks and packaged foods can be taken.
- Water courses are only allowed if a minimum distance of 1.5m is maintained.
- Required cleaning and hygiene plans are required.
- General massages and physical therapy treatments only offered if this is again allowed in general physical therapy practices.
- Spa guests must be informed of notices regarding increased virus requirements.
- Soap dispensers must be attached to sinks and filled regularly.

Stage 2: Reopening of waterparks and spas in normal operation (normal visitor numbers).

- The simultaneity factor (the number of bathers present at the same time) is specified by the number of available lockers.

- Distance and hygiene measures must be kept until the responsible authorities indicate to the contrary.

Canada: According to the Government of Alberta's "*Guide for swimming pools and jacuzzis (COVID-19 information)*", more restrictive parameters have been detailed with regards to social distancing, which establishes a 2m distance between people, and guests are required to make a prior reservation. Additionally, the Guide recommends the following:

- If wrist-bands are required, the operator should use self-applied bracelets and provide waste containers at the facility exit point for their disposal.
- Provide hand sanitizer (60% alcohol or higher) at entry and exit points, and encourage patrons to also bring their own.
- Limit the use of pool toys for flotation aids and lessons only.
- Clean and disinfect shared equipment and launder any rental towels between each use.
- Patrons should not share uncleaned towels, goggles, or any other equipment other than with family members.
- Chlorinated pool water is an effective disinfectant and the risk of transmission from contact with properly treated pool water is considered minimal. Salt water pools are also chlorinated.

Colombia: According to "*Guide for the Management and Control of Water Quality in Public Use Pools*" (Sanchez, Y, 2011), based on the Colombian regulation of swimming pools, the following should be taken into account:

- Guaranteed free residual chlorine of 1 to 3 mg / L.

- Limit use factor (greater than 2.0 m² / bather).
- Recirculation of water for pools for public use: every 4 hours; pools for restricted use: every 6 hours, and pools for private use: every 8 hours.

Additionally:

- Use changing rooms and bathrooms: only one person at the time, respecting distance.
- Own use of towel, bathing suit and hairbrush.
- Shower at home, where possible.

A group of experts at the International Congress "Pool and Spa in times of COVID-19" recommend:

- The minimum interpersonal distance of 2 meters is maintained; a system is also implemented to monitor the number of visitors present and block access; an effective air extraction system is active, as per current legislation; the pool area is equipped with signage of the hygiene standards to be adopted, and with supervising personnel.

3.3. Beaches

Canada: The Government of Alberta's "*Guidance for Beaches and Recreational Areas Near Water (COVID – 19 information)*" recommends the following:

- Pack supplies such as masks and hand sanitizer.
- Plan ahead if the beach has an entrance limit.
- All visitors to beaches should maintain physical distancing of 2 metres from others.
- Consider another activity if intended beach is overcrowded.
- Wash hands with soap and water for at least 20 seconds, especially before eating or drinking, and when arriving and leaving the swim area.
- Hand sanitizers are not as effective when hands are visibly dirty or greasy; wipe sand or dirt off before applying it.

- Avoid sharing items, such as food, equipment, toys, and supplies, with people who do not live with another person, or are not part of person's cohort group.
- If not wearing a mask, make sure to cover coughs and sneezes with a tissue or inside of elbow, throw the tissue in the trash, and wash hands immediately, or if soap and water are not available, use hand sanitizer.
- Wash hands with soap and water for at least 20 seconds or alcohol with a minimum of 60% before and after handling a shared item.
- Items with a soft surface or other items that cannot be cleaned and disinfected should be isolated for a period of 24 hours.
- Picnic tables should be cleaned and disinfected frequently.

The guide recommends that the Government implement:

- COVID-19 signage in highly visible places around the beach, at entrances and exits.
- Encourage visitors to plan ahead for their beach trip, including rules and restrictions.
- Local beach operators must determine a reasonable capacity for the beach area that allows an adequate physical distance from the attendees.
- Local authorities should implement methods to minimize overcrowding, electronic signage along roads to indicate when the beach is full or nearly full, limiting parking spaces and marking ground.
- Limit or close outdoor areas such as floating docks, basketball and volleyball courts, water games or other equipment that cannot maintain a distance of 2 meters.
- Increase the frequency of high-contact cleaning and disinfection of surfaces such as door handles, railings, taps and flush toilets.
- Rental equipment should be cleaned and disinfected after each use (ie. jet skis, tents, life jackets, and sports equipment) and should only be shared between members of the same household or cohort.

- Water sources can remain open and must be cleaned and disinfected frequently.

Europe: The Ministry of Health (Government of Spain) "*Recommendations for the opening of beaches and bathing areas after the COVID-19 crisis*", recommends the following:

- Limit the capacity of bathers, limiting social distancing at all times. The distance between umbrellas is not installed at distances less than 4 m.
- Daily cleaning of the sand in the bathing area.
- Daily cleaning and disinfection of beach furniture (showers, footbaths, litter bins) and transit areas (wooden walkways).
- It is not recommended to carry out collective sports, gatherings of more than 15 people or members of the same family or who do not live together at the same address and the use of all types of beach infrastructure (playgrounds and sports facilities).

Colombia: The use of beaches in Colombia is still restricted by the coronavirus pandemic. The General Maritime Directorate presented to the Ministry of Health the protocol to reopen the beaches in the post-COVID-19, which is in the review stage to later be approved by the National Government (Semana, 2020). Among the main measures to implement this:

- Occupy a space of 10 m² per person, as well as the use of biosafety elements, such as gel (antibacterial), glycerinated alcohol (every 100 meters) and the control of entry by mayors and governors at the local and coastal level.
- No entry of pets to the beaches, no crowds and events such as concerts and beach sports. Physical contact services such as massages are prohibited.
- Food consumption exclusively in authorized areas that comply with the protocols. Only four alcoholic beverages (maximum) per person will be allowed.
- Keep an entry record with address and telephone numbers to be able to contact people in case of contagions.
- The area for the sale of beach items with a distance of 2 m between vendors.

4. CONCLUSIONS

In summary, medical and scientific authorities have assisted governments in developing management strategies for containing and combatting the spread of COVID-19. These experts have determined that at swimming pool centers, spas, and hot springs, it is crucial to have a collective awareness and scrupulous adherence to i) social distancing, ii) daily cleaning, and ii) comprehensive disinfection of surfaces and common areas. (European Waterpark Association E.V., 2020), Government of Alberta, 2020). For beaches, and other natural areas, SCSi does not recommend disinfecting the ground of natural spaces with the usual procedures for urban public spaces. The combined action of sea salt, ultraviolet radiation, and high sand temperatures creates a favorable environment for the inactivation of pathogens for these areas (SCSi, 2020).

5. ACKNOWLEDGMENTS

The financial support of the Canadian Queen Elizabeth II Diamond Jubilee Scholarship Program

(QES), Ryerson University, and University of Cartagena is greatly appreciated.

6. REFERENCES

Journal articles

- Barrera, M., Mehrvar, M, Gilbride, K.A., McCarthy, L.H., Laursen, A.E., Bostan, V., Pushchak, R., (2012). "Photolytic treatment of organic constituents and bacterial pathogens in secondary effluent of synthetic slaughterhouse wastewater". *Chemical Engineering Research and Design*. Vol. 90, pp 1335–1350.
- K.L. Nelson et al., (2018), Sunlight-mediated inactivation of health-relevant microorganisms in water: a review of mechanisms and modeling approaches. *Environ Sci Process Impacts*, 20: 1089–1122.
- Randazzo, W., Truchado, P., Cuevas Ferrando, E., Simon Andreu, P., Allende, A., Sanchez, G., (2020). "SARS-CoV-2 RNA titers in wastewater anticipated COVID-19 occurrence in a low prevalence area". *MedRxiv The preprint server for health sciences*. Pp 394 – 417.

Abstracts of Conferences

International Conference "Pool and Spa in time of COVID-19", (2020). University of Rome "Foro Italico". Protocols and self-checking plans for the hygienic and sanitary safety of post-covid-19 balneotherapy.

Books

- Sanchez, Y. (2011). "Guide for the Management and Control of Water Quality in Public Use Pools". Editorial: Escuela Colombiana de Ingeniería.
- WHO, (2006). World Health Organization. "Guidelines for safe recreational water environments. Swimming pools and similar environments". Volume 2. Available online: http://apps.who.int/iris/bitstream/10665/43336/1/9241546808_eng.pdf (accessed on 29 September 2019).

Websites

- Colombia, Ministry of Interior, (2020). “Article 5, Decree 749 of May 28, 2020. By which instructions are given under the health emergency generated by the COVID-19 coronavirus pandemic, and the maintenance of public order”. Available online: <https://dapre.presidencia.gov.co/normativa/normativa/DECRETO%20749%20DEL%2028%20DE%20MAYO%20DE%202020.pdf> (accessed on 08 July 2020).
- Colombia, Ministry of Interior, (2020). “Article 5, Decree 990 of July 09, 2020. By which instructions are given under the health emergency generated by the COVID-19 coronavirus pandemic and maintenance of law and order”. Available online: <https://dapre.presidencia.gov.co/normativa/normativa/DECRETO%20990%20DEL%209%20DE%20JULIO%20DE%202020.pdf> (accessed on 23 July 2020).
- Colombia, Ministry of Habitat and Housing of Cundinamarca, (2020). Guide with the measures to be implemented by administrators, staff and residents of residential complexes and urbanizations for the containment of COVID-19.
- CTV News Canada, (2020). “Is it safe to swim in a pool during the COVID–19 pandemics?”. June 8 of 2020. Available online: <https://www.ctvnews.ca/health/coronavirus/is-it-safe-to-swim-in-a-pool-during-the-covid-19-pandemic-1.4975060> (accessed on 10 June 2020).
- ECDC, European Centre for Disease Prevention and Control (2020). “Interim guidance for environmental cleaning in non-healthcare facilities exposed to SARS-CoV-2”. Available online: <https://www.ecdc.europa.eu/sites/default/files/documents/coronavirus-SARS-CoV-2-guidance-environmental-cleaning-non-healthcare-facilities.pdf> (accessed on 30 July 2020).
- ECI, Escuela Colombiana de Ingeniería, (2020). “Covid-19 may exist in waste and recreational water?”. Available online: <https://www.es-cuelaing.edu.co/es/eventos/noticias/descripcion/1318> (accessed on 20 May 2020).
- European Waterpark Association E.V., Global Wellness Institute, (2020). “Two-Stage Plan of the European Waterpark Association E.V. for the Reopening of Waterpark and Spas”. Germany. Available online: <https://globalwellnessinstitute.org/wp-content/uploads/2020/04/Two-Stage-Plan-of-the-European-Waterpark-Association-for-the-Reopening-of-Waterparks-and-Spas2-27.pdf> (accessed on 20 May 2020).
- Government of Alberta, 2020. “COVID-19. Guidance for Swimming Pools and Whirlpools”. Available online: <https://www.alberta.ca/assets/documents/covid-19-relaunch-guidance-swimming-pools-and-whirlpools.pdf> (accessed on 20 May 2020).
- Government of Alberta, 2020. “COVID-19. Information Guidance for Beaches and Recreational Areas Near Water”. Available online: <https://www.alberta.ca/assets/documents/covid-19-relaunch-guidance-beaches.pdf> (accessed on 29 July 2020).
- Ministry of Health (Government of Spain), (2020). “Recommendations for the opening of beaches and bathing areas after the COVID-19 crisis”. Available online: <https://www.mscbs.gob.es/gabinetePrensa/notaPrensa/pdf/24.05240520094526477.pdf> (accessed on 30 May 2020).
- RCN Radio, (2020). “In Cartagena, entry to the beaches is prohibited”. Available online: <https://www.rcnradio.com/colombia/caribe/en-cartagena-se-prohibe-ingreso-las-playas> (accessed on 10 June 2020).
- RCN Radio, (2020). “Thermal water complexes in Risaralda closed due to contagion alert”. Available online: <https://www.rcnradio.com/colombia/eje-cafetero/cierran-complejos-de-aguas-termales-en-risaralda-ante-alerta-de-contagios> (accessed on 10 Jun 2020).

- Semana, (2020). "This is the protocol that will allow Colombians to return to the beaches". Available online: <https://www.semana.com/nacion/articulo/noticias-hoy-regreso-reapertura-de-las-playas-en-colombia/681407> (accessed on 8 August 2020).
- Spain, HCSR - Higher Council for Scientific Research, (2020). Report on the transmission of SARS-CoV-2 in beaches and swimming pools. Available online: https://www.idaea.csic.es/wp-content/uploads/2020/05/INFORME_PlayasyPiscinas_.pdf (accessed on 08 July 2020).
- Spain, SCSI - Superior Council of Scientific Investigations, (2020). "Report on the transmission of sars-cov-2 in beaches and swimming pools". Available online: https://www.csic.es/sites/default/files/informe_playasypiscinas_csic.pdf (accessed on 20 May 2020).
- United States, CDC, Centers for Disease Control and Prevention, (2020). "Coronavirus Disease 2019 (COVID-19)- Section Water". Available online: https://www.cdc.gov/coronavirus/2019-ncov/faq.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fphp%2Fwater.html#COVID-19-and-Water (accessed on 20 June 2020).
- WHO, World Health Organization (2020). How is COVID-19 spread?. Available online: <https://www.who.int/es/emergencies/diseases/novel-coronavirus-2019/advice-for-public/q-a-coronaviruses> (accessed on 10 Jun 2020).