COVID-19 RESPONSE: COMPARATIVE CASE STUDY BETWEEN ITALY, SWEDEN AND SOUTH KOREA

epha european public health alliance

About EPHA

EPHA is a change agent – Europe's leading NGO alliance advocating for better health. We are a dynamic member-led organisation, made up of public health civil society, patient groups, health professionals, and disease groups working together to improve health and strengthen the voice of public health in Europe.

About EPHA's Health Inequalities Advocacy

We stand against discrimination, for inclusion and equal opportunities for all to live, work and age in sustainable, healthy environments. EPHA has called on researchers and policy analysts to submit research articles to help build knowledge about how the health of disadvantaged groups is affected by inequalities in areas such as employment, housing, education, healthcare, environment, and climate.

The Authors:
Sharmi Haque[1], Rok Hrzic[2], Arrash Yassaee[3], Robin Van Kessel[2]

[1]Faculty of Health, Medicine and Life Sciences, Maastricht University, Netherlands

[2]Department of International Health, Care and Public Health Research Institute - CAPHRI, Maastricht University

[3]Centre for Paediatrics and Child Health, Faculty of Medicine, Imperial College, United Kingdom

Co-funded by the
Health Programme of
the European Union

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) is a novel coronavirus and the agent of coronavirus disease 2019 (COVID-19). SARS-CoV2 is known to have originated in Wuhan, China. The WHO declared COVID-19 a pandemic in March 2020. COVID-19 presents as a respiratory illness of varying severities ranging from a common cold-like illness to a severe viral pneumonia and acute respiratory distress syndrome. Amidst the pandemic, COVID-19 responses have varied between across Europe and beyond. Contrasting the country responses to COVID-19 is of great interest as it identifies lessons for future pandemic preparedness (Bjørnskov, 2021; Habib, 2020).

Objective

The objective of this study is to inform policymakers about the effectiveness of country-specific COVID-19 responses in reducing the cases of COVID-19 and the role of health inequalities. The responses of Italy, Sweden, and South Korea between March and September 2020 were selected for an in-depth analysis.

Rationale

Italy had installed a national lockdown, minimised outdoor activities, and imposed restrictions on international travel and public gatherings. In contrast, Sweden had adopted a less restrictive strategy, permitting outside activities to take place, and allowing gatherings of up to 50 persons, while restricting international and non-essential travel (Habib, 2020). South Korea was able to bring the transmission of COVID-19 under control through more targeted measures, avoiding a national lockdown and instead increasing the deployment of COVID-19 testing and contact tracing(COVID-19 and the Long Road to Herd Immunity | Hub, n.d.)(Ritchie et al., 2020a).

Methods

Given the contemporary nature of the topic, a broad literature search of grey and academic literature was conducted on the following databases "PubMed" "Medline" "Web of Science", "Google Scholar" and "World Health Organization-WHO". The following keywords were used "severe acute respiratory syndrome coronavirus", "2019-nCoV", "COVID-19, "SARS", "SARS-CoV-2". The terms and databases were selected to permit the topic to be contextualised and summarise existing knowledge. A range of sources should be employed including European Centre Disease and Control, WHO, Our World in Data and national governmental websites with legal documents. The Oxford COVID Response Tracker was employed to understand how these governmental responses have translate over the course of the pandemic. This response tacker will assess the impact of the response quantitatively as the project collates information of governmental policies interventions across various composite indices (Hale et al., 2021).

Policy indicators (C1-C8) records information of both containment and closure policies, (E1-E4) records information on economic policies, (H1-H7) records health policies. The data is aggregated to a set of four common indices and reports a number between 1- 100 to provide a value to under the government response. It displays information on the overall government response index, containment and health index, economic support index and stringency index. In addition, we assessed the extent to which the measures likely impacted health inequalities.

Policy surveillance techniques will be employed to assess to the extent at which the legislation has impacted health inequalities to the populations of the given countries(Hale et al., 2021).

Results

Figure 1 illustrates the cumulative confirmed COVID-19 cases in Italy, Sweden, and South Korea to provide context. *Table 1* summarises the COVID-19 restrictions to provide comparison between Italy, Sweden, and South Korea (Ritchie et al., 2020b). *Figures 2* and *3* show the COVID-19 Government Response Stringency Index (GRSI). For Italy, the GRSI increased from 85.19 in March to its peak of 93.52 and gradually declined since May. South Korea has a relatively stable GRSI from March 2020 (55.56) to October 2020 (54.63). The GRSI for Sweden was very low until March, rising to a peak of 46.30 in April and steadily decreased to 37.04 in October 2020 (Hale et al., 2021). *Figure 4* shows daily COVID-19 tests in comparison to daily new confirmed cases per Million in Italy, Sweden and South Korea and highlights the differences in the testing strategies. The plot for South Korea shows a strong relationship between COVID-19 daily tests and daily confirmed cases from the start of the pandemic. In contrast, Sweden and Italy had started testing much later and the association between daily tests and daily cases is strengthened only after April 2020 (Ritchie et al., 2020b). *Figure 5* illustrates the comparative cumulative COVID-19 deaths and shows that Italy suffered a steep death toll while Sweden and South Korea reporting much fewer deaths (Ritchie et al., 2020b).

South Korea COVID-19 Response

South Korea was able to prevent a rate from greatly increasing within a short time without implementing stricter measures which was adopted by other EU countries (Choi, 2020). It was evident that South Korea had a clear direction in detection, containment, and treatment. The focus on case-based testing and isolation had assisted in the early identification and case management. Large clusters of confirmed cases and targeted lockdowns in provincial regions was employed (The Government of the Republic of Korea 2020). The South Korean response was characterized by the deployment of high-capacity screening clinics which were enabled to screen people effectively. South Korea was also able to isolate infected COVID- 19 cases and support individuals in quarantine, consequently improving public health compliance (Han et al., 2020).

To maintain contact tracing, epidemiological intelligence officers were empowered to use a diverse range of data sources (Coronavirus Disease-19 (COVID-19), Republic of Korea, n.d.). The response was rapid, and lessons were learnt from the Middle East Respiratory Syndrome and the government was able to make several reforms to increase preparedness (Choi, 2020). Although South Korea was able to effectively manage the crisis, its populations were more clustered and in confined areas. Contact tracing proved effectively because the cases were often due to a small number of high transmission events of locations making

it easier to trace (Han et al., 2020). On cultural and legal perspective, it is apparent that South Korea is a tolerant of personal data sharing and the response rested heavily on the ability to rapidly scale up technological solutions. South Korea had invested a great deal in preparedness, decisive and data driven leadership (Dighe et al., 2020). The response was based upon several measures which included both testing and social distancing measures but there is little evidence to account for the success in the response to the outbreak (Tackling COVID-19 The Government of the Republic of Korea 1, n.d.). The KCDC data had limitations to the datasets because there was scarce information on the total number of contacts per confirmed case. Further considerations also need to be made as the population of South Korea was highly urbanised (Ahn et al., 2020).

Italy COVID-19 Response

Italy's initial response was to contain the virus with 11 municipalities in Lombardy and Veneto being identified as 'red zones' (Remuzzi & Remuzzi, 2020; Sartor et al., 2020). While the Italian centralised government was responsible for public health interventions, the Italian healthcare system is decentralised, which hampered a cohesive strategy (Palacios Cruz et al., 2021). The resources available to private and public healthcare providers differed widely from region to region (Europe's Country-by--Country Travel Restrictions Explained – POLITICO, n.d.). The slow initial response resulted in up to 50-70% of the available hospital beds becoming occupied by COVID-19 patients (Felice et al., 2020). Resource scarcity had forced doctors to make difficult decisions regarding which patients would be placed on respirators to improve survival outcomes (Remuzzi & Remuzzi, 2020). Italy was not prepared for the scale of this pandemic, which likely contributed to the sense of chaos experienced. Good preparedness would be pivotal in an effective response to COVID-19 (Felice et al., 2020).

With an increased surge in COVID-19 cases, Italy was not alone amongst the EU member states that struggled to manage the situation (Armocida et al., 2020). Italy has a rapidly ageing population and the nursing homes for the elderly had become high risk location. Older patients are more susceptible to a more severe course of COVID-19 as they often have multiple comorbidities(Berardi et al., 2020). It would be difficult to attribute the large number of excess deaths due to the slow roll out of testing, but it is likely that COVID-19 is the cause of this increase (Remuzzi & Remuzzi, 2020).

Swedish COVID-19 Response

Sweden had implemented a less restrictive strategy placing a greater focus on individual responsibility (Habib, 2020). The strategy rested on protected senior citizens and slow down the spread of COVID-19. During March, the Swedish government did not comply with WHO recommendations to initiate a lockdown. The Swedish approach was a mixture of national, regional, and local policies (Baral et al., 2021).

The key aims of the Swedish COVID-19 response in the pandemic preparedness plan is to reduce mortality, minimize various negative consequences for both individuals and society (Mishra et al., 2021). Swedish policies were centered on the most vulnerable and the key driver was to manage the curve by matching demand and capacity (Flaxman et al., 2020). The COVID-19 response was built on mutual trust and bringing back the responsibility the individual (Folkhälsomyndigheten, 2020). The response could be deemed to be a success as the healthcare system was not overwhelmed. Despite reports that the Swedish response rested on herd immunity, the Swedish government wanted to provide a way to live with virus in a sustainable way. It is not clear whether herd immunity was intended to be achieved (Caristia et al., 2020).

Discussion

Our review shows that South Korea had success with rapid and high--volume testing coupled with contact tracing that had helped the identification of COVID-19 cases (Choi, 2020). However, Sweden has opted for much more lenient measures that likewise proved effective in maintaining healthcare system capacity over the short term. Italy had adopted the lockdown that included severe mobility restrictions, which was a common response across the EU (Remuzzi & Remuzzi, 2020).

The trend in cumulative confirmed COVID-19 cases in Italy shows that the restrictions helped slow down the spread of the virus. In particular, the time during which the restrictions were introduced corresponds to the plateau of the COVID-19 cases between April 2020 till August 2020. Similarly, Sweden had shown a plateau in the cumulative confirmed COVID-19 cases despite relatively lax restrictions (Baral et al., 2021; Habib, 2020). The mechanism behind this reduction remains unclear, but it suggests large country differences in the response required and speaks against the need for EU-wide harmonisation (Mishra et al., 2021). South Korea has commenced testing at the start of the pandemic through low contact-tracing and high-volume testing and were able to isolate cases quickly which accounts for the decreased trend (Ludvigsson, 2020).

Italy experienced a very steep increase in the cumulative death rate, which may be due to the large elderly population (Felice et al., 2020). However, Italy was able to *bend the curve* and reduce the mortality rate as the restrictions were introduced. In comparison, South Korea was in effect able to prevent a large outbreak altogether (Berardi et al., 2020).

When considering the GRSI, South Korea had a relatively stable index from April 2020 – October 2020 suggesting that consistent measures of a certain stringency can reduce the Covid-19 cases (Jeong et al., 2020). In comparison, Sweden had a far lower GRSI at the beginning of the outbreak, but rapidly ramped it up in April, matching Italy by June. It may indicate that Sweden had a greater public compliance adherence and less need for more stringent measures to control the virus spread (Baral et al., 2021). Italy had a high GRSI index from the start, only lifting restrictions towards end of May. Italy was not prepared for the surge of COVID-19 cases, which made it necessary to impose stringent measures to maintain healthcare capacity (Berardi et al., 2020).

There are limitations to these indicators in that the index simply records the strictness of government policies and does not measure nor imply a country's appropriateness of a COVID-19 response (Hale et al., 2021). A higher score does not suggest a COVID-19 response was more effective than a lower score. Their strength is in highlighting the variation between government responses and the extent to which changes in government responses influenced the rate of infection. Overall, more in-depth analysis should be done to assess the extent to which the GRSI corresponds to the rate at which new COVID-19 cases or deaths occurred.

Despite these limitations, the following policy lessons can be learned from the early stage of the COVID-19 pandemic:

Rapid, High-Volume and Low-Contact Testing

Implementation of low contact tracing which can be easily scaled up have shown to be effective and it would enable governments to detect, track and quarantine new infections. Implementing an infrastructure that can assist in low contact tracing further enabling governments to control the spread of the virus (Dighe et al., 2020).

Securing Public Compliance

Governments must install a sense of collective identity to ensure that there is a voluntary compliance with COVID-19 measures. Policy makers must provide a transparent rationale for quarantine and information about definitive protocols (Ludvigsson, 2020).

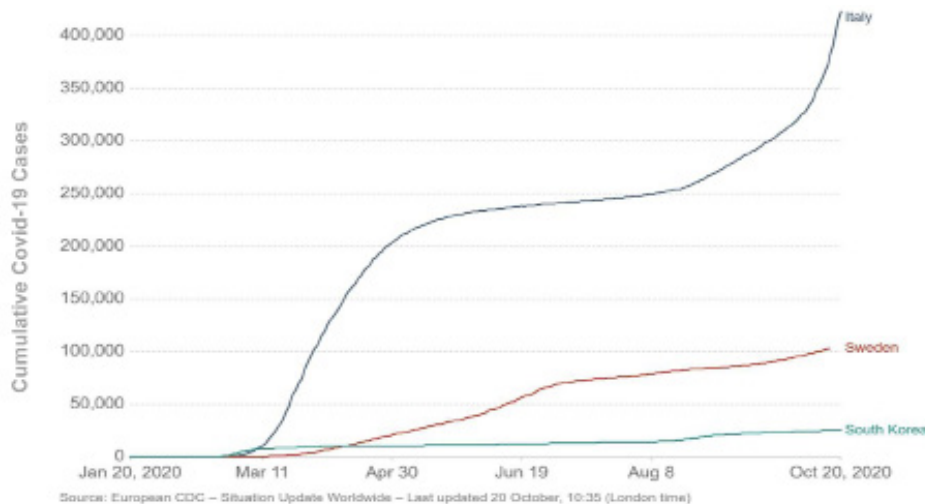**Bolstering the public health services for emergency services for crisis management**

Governments need to be prepared for the possible future crisis for public and the healthcare systems to navigate themselves throughout future outbreaks. Failure to do so can have detrimental impacts on the ability to handle the situation (Choi, 2020).

Conclusions

There is *no size fits all* in the analysis of the COVID-19 response. Italy had to impose a restrictive measure to ensure that the healthcare system had resources and time to combat the outbreak. Italy has an increasingly elderly population with comorbidities who were vulnerable to the virus and had attributed to the increased death toll. On the other hand, Sweden had placed the responsibility back onto the individual and were able to secure public health compliance. It is apparent that Sweden was able to adopt the strategy which may not be appropriate to replicate in other EU member states. South Korea was able to afford lessened restrictions due to the high-volume testing. With low contact high volume tracing, cases could be isolated and there was less reliance on other measures making the restrictions more sustainable.

Figure 1: Comparative Graph between Italy, Sweden and South Korea

Cumulative Confirmed COVID-19 Cases (*Coronavirus (COVID-19) Cases - Statistics and Research - Our World in Data*, n.d.)

Source: European CDC – Situation Update Worldwide – Last updated 20 October, 10:35 (London time)

Cumulative confirmed COVID-19 cases between Italy, Sweden and South Korea from the start of the outbreak to October 2020. Italy has increased trend from March 2020- till October with a plateau between April 2020 - August 2020. Sweden has a much lower cumulative trend March 2020 till October 2020. South Korea exhibits a further decreased trend between March 2020 – October 2020. It is important to note that the number of confirmed cases is lower than the number of actual cases.
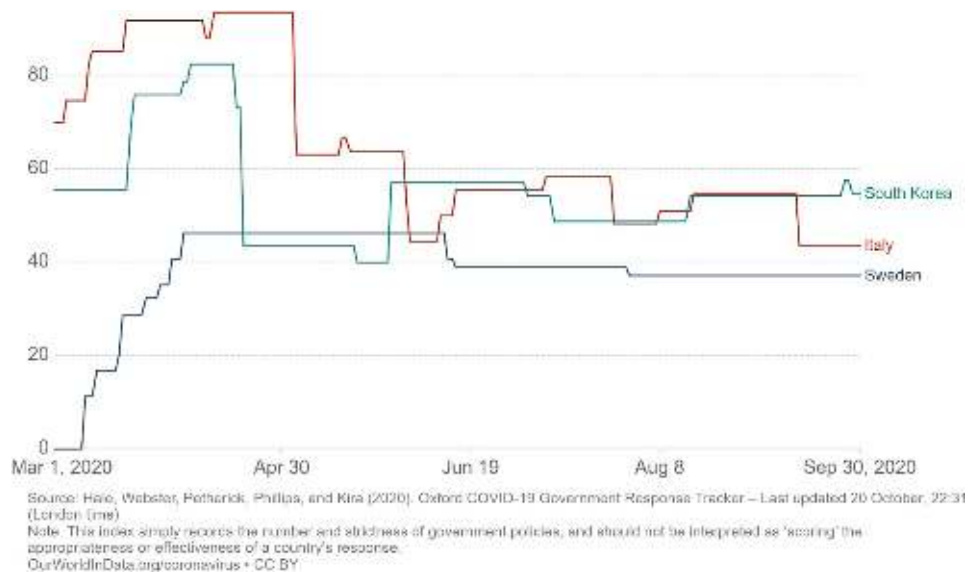
Figure 2: Timeline of Government Response Stringency Index and Key Points in COVID-19

Pandemic for Italy, Sweden and South Korea (Hale et al., 2021)

Mar 11, 2020		Apr 30, 2020		Jun 1, 2020		Jun 30, 2020	
Italy	85.19	Italy	93.52	Italy	63.89	South Korea	56.94
South Korea	55.56	Sweden	46.30	South Korea	56.94	Italy	55.56
Sweden	11.11	South Korea	43.52	Sweden	46.30	Sweden	38.89

| Jul 31, 2020		Aug 7, 2020		Sep 1, 2020		Oct 1, 2020	
South Korea	48.61	South Korea	48.61	Italy	54.63	South Korea	54.63
Italy	48.15	Italy	48.15	South Korea	54.17	Italy	43.52
Sweden	37.04	Sweden	37.04	Sweden	37.04	Sweden	37.04

The diagram illustrates the GRSI and the key points during the COVID-19 pandemic and how the strict the indices were in relation to each other. Italy remains high initially at the start of the pandemic. South Korea remains stringent at a steady rate. Sweden was not stringent in comparison to both Italy and South Korea but started to increase GRSI between April and June.

Figure 3: Comparative Graph between Italy, Sweden and COVID-19 Government Response Stringency Index (Hale et al., 2021)

Source: Hale, Webster, Petherick, Phillips, and Kira (2020). Oxford COVID-19 Government Response Tracker – Last updated 20 October, 22:31 (London time)
Note: This index simply records the number and strictness of government policies, and should not be interpreted as 'scoring' the appropriateness or effectiveness of a country's response.
OurWorldInData.org/coronavirus • CC BY

COVID-19 Government Response Stringency Index is the composite measure based upon 9 response indicators which is inclusive of certain factors which include school, workplace closures and travel bans. The GRSI is scaled from 0-100. It is important to consider the policies that vary at a subnational level; the index has shown the response level of the strictest subnational region. From the graph, it can be concluded that South Korea and Italy had similar GRSI between March till the beginning of May 2020. Sweden has decreased Government Response Stringency Index from March 2020 till April 2020. After June 2020, Italy had plateaued at after June 19 2020 till Sept 30 2020. South Korea still had a relatively higher GRSI when compared to Sweden.

Figure 4: **Comparative Scatter Plot comparing COVID- 19 Daily Tests vs Daily New Confirmed Cases per Million Italy, Sweden and South Korea** (Ritchie et al., 2020b)
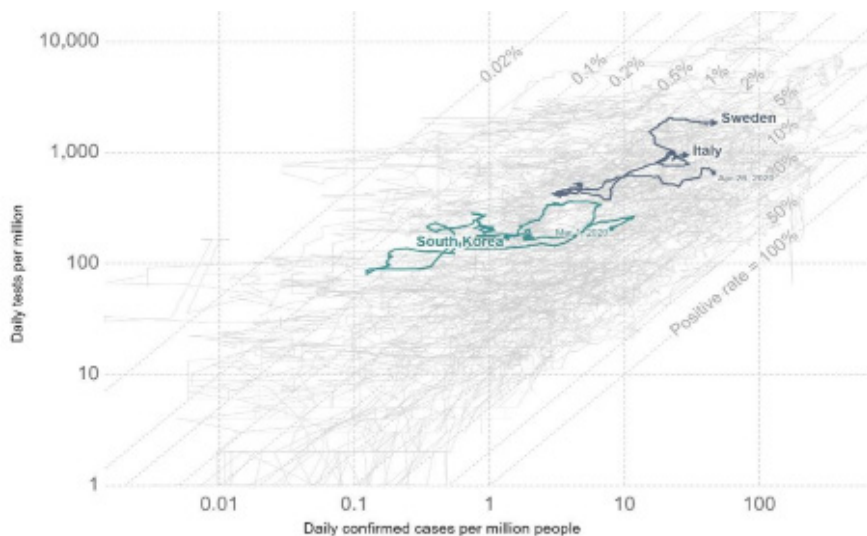
Source: Testing data from official sources collated by Our World in Data, confirmed cases from ECDC. OurWorldInData.org/c
Note: Comparisons of testing data across countries are affected by differences in the way the data are reported. Daily data is int
countries not reporting testing data on a daily basis. Details can be found at our Testing Dataset page.

COVID-19 daily tests vs Daily New confirmed cases per Million provides a way to understand the extent of testing in relation to the scale of the outbreak in Italy, Sweden and South Korea. The y- axis are the daily number of tests whilst the x-axis displays the daily number of new confirmed cases per million people. South Korea had already started testing from the start of the pandemic when compared to both Italy and Sweden. It does need to be noted that where the number of confirmed cases which is higher in relation to the extent of testing. It would be plausible that there may be insufficient testing carried out to truly monitor the outbreak. It is probably that both Sweden and Italy had a true higher number of infections when compared against the number of confirmed cases.

Figure 5: Comparative Cumulative Confirmed COVID-19 Death in Italy, Sweden and South Korea (Ritchie et al., 2020b)
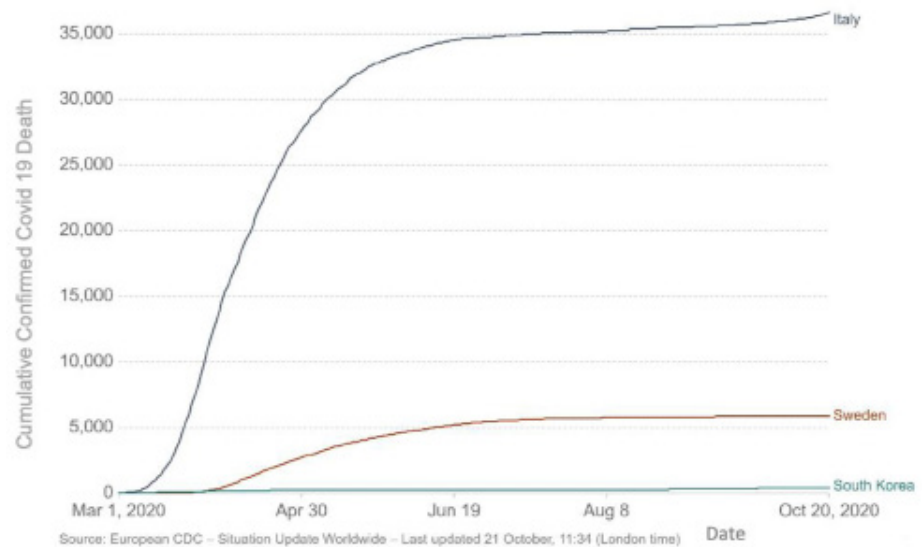
From the graph the death toll for Italy is significantly higher when compared to Sweden and South Korea. Between June and October 2020 the death toll has stabilized in all 3 countries. It is important to note that the actual total death from COVID- 19 is higher than the number of confirmed deaths. The reason behind this is attributed to limited testing and the issues with understanding the true cause of death. Further limitations include that there may be differences between both reported confirmed deaths and total deaths. The way COVID-19 deaths are recorded may vary between the 3 countries. Deaths interpretation and recording may differ as some countries may only hospital death whilst other countries may include deaths that occur outside of the hospital. Although some reported deaths on a date may not be reflective of the number of new deaths on that day as there may be reporting delays.

Table 1 – Comparative Table Demonstrating of the Key COVID-19 Measures in Italy, Sweden and South Korea
(Karal et al., 2021; Republic of Korea, 2020; Sarbor et al., 2020)

SPECIFIC COUNTRY INVESTIGATED		COVID-19 MEASURES					
		LOCKDOWN	OUTSIDE ACTIVITIES	STATE OF EMERGENCY	INTERNATIONAL FLIGHTS	EVENTS	BORDERS AND TRAVELS
	ITALY	Yes, serial lockdown and non essential production halted. Bookshops, stationery shops and stores for children allowed to reopen as of April 14.	Allowed, but only around own home.	Yes	Restricted	All events and public gatherings banned	Open, but all neighbouring countries have restricted entry.
	SWEDEN	No	Allowed	No	Restricted	Gatherings of more than 50 people since March 27	Ban on non-essential travel
	SOUTH KOREA	No National Lockdown. Clustered targeted lockdown. Independent home-based lockdown	Allowed	Yes	Restricted	Ban on gatherings. Immigration	Other countries have restricted entry from South Korea

The table demonstrates the key measures imposed on population as reported on research. There are similarities in some of the measures. The outcomes are not necessarily the same. Sweden and South Korea were careful to restrict entry from other nations. Lockdown appeared to be a prominent feature in Italy, like most EU nations. In contrast, South Korea and Sweden do not implement a national lockdown. It useful to note that South Korea did have lockdown as a feature, but it was implemented as a clustered targeted strategy.

Reference List

Ahn, D. G., Shin, H. J., Kim, M. H., Lee, S., Kim, H. S., Myoung, J., Kim, B. T., & Kim, S. J. (2020). Current Status of Epidemiology, Diagnosis, Therapeutics, and Vaccines for Novel Coronavirus Disease 2019 (COVID-19). *Journal of Microbiology and Biotechnology*, *30*(3), 313–324. https://doi.org/10.4014/JMB.2003.03011

Armocida, B., Formenti, B., Ussai, S., Palestra, F., & Missoni, E. (2020). The Italian health system and the COVID-19 challenge. *The Lancet. Public Health*, *5*(5), e253. https://doi.org/10.1016/S2468-2667(20)30074-8

Baral, S., Chandler, R., Prieto, R. G., Gupta, S., Mishra, S., & Kulldorff, M. (2021). Leveraging epidemiological principles to evaluate Sweden's COVID-19 response. *Annals of Epidemiology*, *54*, 21–26. https://doi.org/10.1016/J.ANNEPIDEM.2020.11.005

Berardi, C., Antonini, M., Genie, M. G., Cotugno, G., Lanteri, A., Melia, A., & Paolucci, F. (2020). The COVID-19 pandemic in Italy: Policy and technology impact on health and non-health outcomes. *Health Policy and Technology*, *9*(4), 454–487. https://doi.org/10.1016/J.HLPT.2020.08.019

Bjørnskov, C. (2021). Did Lockdown Work? An Economist's Cross-Country Comparison. *Cesifo Economic Studies*, *67*(3), 318–331. https://doi.org/10.1093/CESIFO/IFAB003

Caristia, S., Ferranti, M., Skrami, E., Raffetti, E., Pierannunzio, D., Palladino, R., Carle, F., Saracci, R., Badalni, C., Barone-Adesi, F., Belleudi, V., & Ancona, C. (2020). Effect of national and local lockdowns on the control of COVID-19 pandemic: A rapid review. *Epidemiologia e Prevenzione*, *44*(5–6), 60–68. https://doi.org/10.19191/EP20.5-6.S2.104

Choi, J. Y. (2020). COVID-19 in South Korea. *Postgraduate Medical Journal*, *96*(1137). https://doi.org/10.1136/POSTGRADMEDJ-2020-137738

Coronavirus (COVID-19) Cases - Statistics and Research - Our World in Data. (n.d.). Retrieved November 26, 2021, from https://ourworldindata.org/covid-cases#what-is-the-cumulative-number-of-confirmed-cases

Coronavirus Disease-19(COVID-19), Republic of Korea. (n.d.). Retrieved November 25, 2021, from http://ncov.mohw.go.kr/en/

COVID-19 and the long road to herd immunity | Hub. (n.d.). Retrieved November 25, 2021, from https://hub.jhu.edu/2020/04/30/herd-immunity-covid-19-coronavirus/

Dighe, A., Cattarino, L., Cuomo-Dannenburg, G., Skarp, J., Imai, N., Bhatia, S., Gaythorpe, K. A. M., Ainslie, K. E. C., Baguelin, M., Bhatt, S., Boonyasiri, A., Brazeau, N. F., Cooper, L. v., Coupland, H., Cucunuba, Z., Dorigatti, I., Eales, O. D., van Elsland, S. L., Fitzjohn, R. G., … Riley, S. (2020). Response to COVID-19 in South Korea and implications for lifting stringent interventions. *BMC Medicine*, *18*(1). https://doi.org/10.1186/s12916-020-01791-8

Europe's country-by-country travel restrictions explained – POLITICO. (n.d.). Retrieved November 25, 2021, from https://www.politico.eu/article/coronavirus-travel-europe-country-by-country-travel-restrictions-explained-summer-2020/

Felice, C., di Tanna, G. L., Zanus, G., & Grossi, U. (2020). Impact of COVID-19 Outbreak on Healthcare Workers in Italy: Results from a National E-Survey. *Journal of Community Health*, *45*(4), 675–683. https://doi.org/10.1007/S10900-020-00845-5

Flaxman, S., Mishra, S., Gandy, A., Unwin, H. J. T., Mellan, T. A., Coupland, H., Whittaker, C., Zhu, H., Berah, T., Eaton, J. W., Monod, M., Perez-Guzman, P. N., Schmit, N., Cilloni, L., Ainslie, K. E. C., Baguelin, M., Boonyasiri, A., Boyd, O., Cattarino, L., … Bhatt, S. (2020). Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe. *Nature*, *584*(7820), 257–261. https://doi.org/10.1038/s41586-020-2405-7

Folkhälsomyndigheten. (2020). *Public Health Agency of Sweden. Antal fall av covid-19 i Sverige—data till och med föregående dag publiceras varje tisdag-fredag kl*.

Habib, H. (2020). Has Sweden's controversial covid-19 strategy been successful? *BMJ*, *369*. https://doi.org/10.1136/BMJ.M2376

Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T., Webster, S., Cameron-Blake, E., Hallas, L., Majumdar, S., & Tatlow, H. (2021). A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nature Human Behaviour*, *5*(4), 529–538. https://doi.org/10.1038/S41562-021-01079-8

Han, E., Mei Jin Tan, M., Turk, E., Sridhar, D., Leung, G. M., Shibuya, K., Asgari, N., Oh, J., García-Basteiro, A. L., Hanefeld, J., Cook, A. R., Yang Hsu, L., Ying Teo, Y., Heymann, D., Clark, H., McKee, M., & Legido-Quigley, H. (2020). Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe. *Health Policy* https://doi.org/10.1016/S0140-6736(20)32007-9

Jeong, E., Hagose, M., Jung, H., Ki, M., & Flahault, A. (2020). Understanding south Korea's response to the COVID-19 outbreak: A real-time analysis. *International Journal of Environmental Research and Public Health*, *17*(24), 1–18. https://doi.org/10.3390/ijerph17249571

Ludvigsson, J. F. (2020). The first eight months of Sweden's COVID-19 strategy and the key actions and actors that were involved. *Acta Paediatrica, International Journal of Paediatrics*, *109* (12), 2459–2471. https://doi.org/10.1111/apa.15582

Mishra, S., Scott, J. A., Laydon, D. J., Flaxman, S., Gandy, A., Mellan, T. A., Unwin, H. J. T., Vollmer, M., Coupland, H., Ratmann, O., Monod, M., Zhu, H. H., Cori, A., Gaythorpe, K. A. M., Whittles, L. K., Whittaker, C., Donnelly, C. A., Ferguson, N. M., & Bhatt, S. (2021). Comparing the responses of the UK, Sweden and Denmark to COVID-19 using counterfactual modelling. *Scientific Reports 2021 11:1*, *11*(1), 1–9. https://doi.org/10.1038/s41598-021-95699-9

Palacios Cruz, M., Santos, E., Velázquez Cervantes, M. A., & León Juárez, M. (2021). COVID-19, a worldwide public health emergency. *Revista Clinica Espanola*, *221* (1), 55–61. https://doi.org/10.1016/j.rce.2020.03.001

Remuzzi, A., & Remuzzi, G. (2020). COVID-19 and Italy: what next? *Lancet (London, England)*, *395* (10231), 1225–1228. https://doi.org/10.1016/S0140-6736(20)30627-9

Ritchie, H., Mathieu, E., Rodés-Guirao, L., Appel, C., Giattino, C., Ortiz-Ospina, E., Hasell, J., Macdonald, B., Beltekian, D., & Roser, M. (2020a). Coronavirus Pandemic (COVID-19). *Our World in Data*. https://ourworldindata.org/coronavirus

Ritchie, H., Mathieu, E., Rodés-Guirao, L., Appel, C., Giattino, C., Ortiz-Ospina, E., Hasell, J., Macdonald, B., Beltekian, D., & Roser, M. (2020b). Coronavirus Pandemic (COVID-19). *Our World in Data*. https://ourworldindata.org/coronavirus

Sartor, G., del Riccio, M., Dal Poz, I., Bonanni, P., & Bonaccorsi, G. (2020). COVID-19 in Italy: Considerations on official data. *International Journal of Infectious Diseases*, *98*, 188–190. https://doi.org/10.1016/J.IJID.2020.06.060

Tackling COVID-19 The Government of the Republic of Korea 1. (n.d.).