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Security Nexus Perspectives

# WHAT STATES SAY THEY CAN DO AND COVID-19 STATUS AT SIX MONTHS

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**Abstract**

The International Health Regulations (IHR) is a critical legal tool that ensures and improves the capacity of all signatories, or States Parties, to prevent detect, assess, notify, and respond to public health risks and acute events of domestic and international concern. States Parties of the IHR assess their capacities and report annually to the World Health Assembly on the implementation status of these regulations using the Self-Assessment Annual Reporting Tool (SPAR). This paper examines the relationship between total average SPAR scores and COVID-19 morbidity and mortality. A positive significant correlation was observed between total average SPAR score and log values of COVID-19 cases and deaths per 100,000 population. Nevertheless, when examined by World Health Organization regions, this positive significant correlation remained only for a few, signalling that regional dynamics and factors may not be adequately captured by SPAR scores. In addition to the State Parties assessment, a community and civil society inclusive IHR monitoring mechanism is recommended for a more comprehensive assessment.

## Background

The revised International Health Regulations (IHR) are a legal instrument that ensures and improves the capacity of all signatories or States Parties to prevent, detect, assess, notify, and respond to public health risks and acute events. It is obligatory for the States Parties to develop and maintain minimum core capacities for surveillance and response to any potential public health event of international concern. The

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full application, implementation, and compliance by all States Parties in relation to IHR is essential to ensure public health security (World Health Organization 2005).

Under IHR, both States Parties and the Director-General of the World Health Organization (WHO) report to the World Health Assembly on the implementation of the IHR (World Health Organization 2018a). The State Party Self-Assessment Annual Reporting Tool (or SPAR) is used by States Parties for annual reporting. It consists of 24 indicators for the 13 IHR capacities needed to detect, assess, notify, report and respond to public health risk and acute events of domestic and international concern (World Health Organization 2018b). It is comprised of mandatory annual reporting that is supplemented by three voluntary components of the IHR Monitoring and evaluation framework, namely: after action review, simulation exercise and voluntary external evaluation (World Health Organization 2018a).

The reported SPAR capacity scores by State Parties signal the readiness of states, regions and the world as a whole to face public health events of international concern (Kandel et al. 2020). The COVID-19 Pandemic which was declared a Public Health Emergency of International Concern on January 30, 2020 has been a testing time for the IHR capacity of states (World Health Organization 2020c). As a result, the COVID-19 Pandemic can be used to assess how the reported IHR capacities function in a real-life scenario. While many factors in addition to IHR capacities of States determine morbidity and mortality outcomes during a pandemic, it is rational to argue that States with higher IHR capacities should have lower morbidity and mortality. This study examined the relationship between SPAR scores and the observed number of COVID-19 cases and deaths in different countries.

**Methods**

Self-reported SPAR capacity scores of 171 States, as 14 July 2020 were obtained from the World Health Organization through the online E-SPAR platform for the reporting year 2019 (World Health Organization 2020a). The number of COVID-19 cases and deaths for the 171 state parties were extracted from the World Health Organization Dashboard as of June 30, 2020 (World Health Organization 2020b). The latest population data was obtained from the World Bank (World Bank 2020). SPSS Version 10 and ArcGIS Pro were used for the analysis.

The number of COVID-19 cases and deaths per 100,000 population were calculated and plotted, as well as their log transformed values, against the total and individual SPAR scores. Further, we examined the same correlations by different WHO regions. The correlations between the SPAR capacity scores and the log cases per 100,000 population and log deaths per 100,000 population is shown in Table 1.

**Table 1**: Correlation coefficients of association between log COVID 91 cases and deaths per 100,000 population and total average SPAR scores by WHO region.

| WHO Region | Log cases per 100,000 population | | | Log deaths per 100,000 population | | |
|---|---|---|---|---|---|---|
| | r | p | n* | r | p | n* |
| AFRO | -0.169 | 0.261 | 46 | -0.176 | 0.264 | 42 |

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|---|---|---|---|---|---|---|
| AMRO | 0.221 | 0.248 | 29 | 0.202 | 0.332 | 25 |
| EMRO | 0.552 | 0.014 | 19 | 0.489 | 0.034 | 19 |
| EURO | 0.282 | 0.047 | 50 | 0.295 | 0.038 | 50 |
| SEARO | -0.012 | 0.973 | 10 | 0.308 | 0.457 | 8 |
| WPRO | 0.825 | 0.002 | 11 | -0.658 | 0.156 | 6 |
| All regions | 0.434 | 0.001 | 160 | 0.447 | 0.001 | 146 |

* The total number of States do not add up to 171 since the 21 that did not report any COVID-19 case (six countries) or deaths were excluded from the analysis.

**Results**

Out of the total of 196 State Parties, 171 (87.2%) had submitted their status for the year 2019 as per 14 July 2020. Out of the State Parties who submitted, six (3.5%) did not report any COVID-19 cases as per 31 June 2020, while 21 (12.3%) did not report any COVID-19 deaths. Among the countries that did not report any COVID-19 cases, total average SPAR scores ranged from 35 to 69, while among those who did not report any COVID-19 death, total average SPAR scores ranged from 22 to 84.

The distribution of total average SPAR scores, COVID-19 cases per 100,000 population and COVID-19 deaths per 100,000 population are shown in Figure 1. It is seen that the distribution of total average SPAR scores did not follow the same pattern of cases and deaths per 100,000 population.

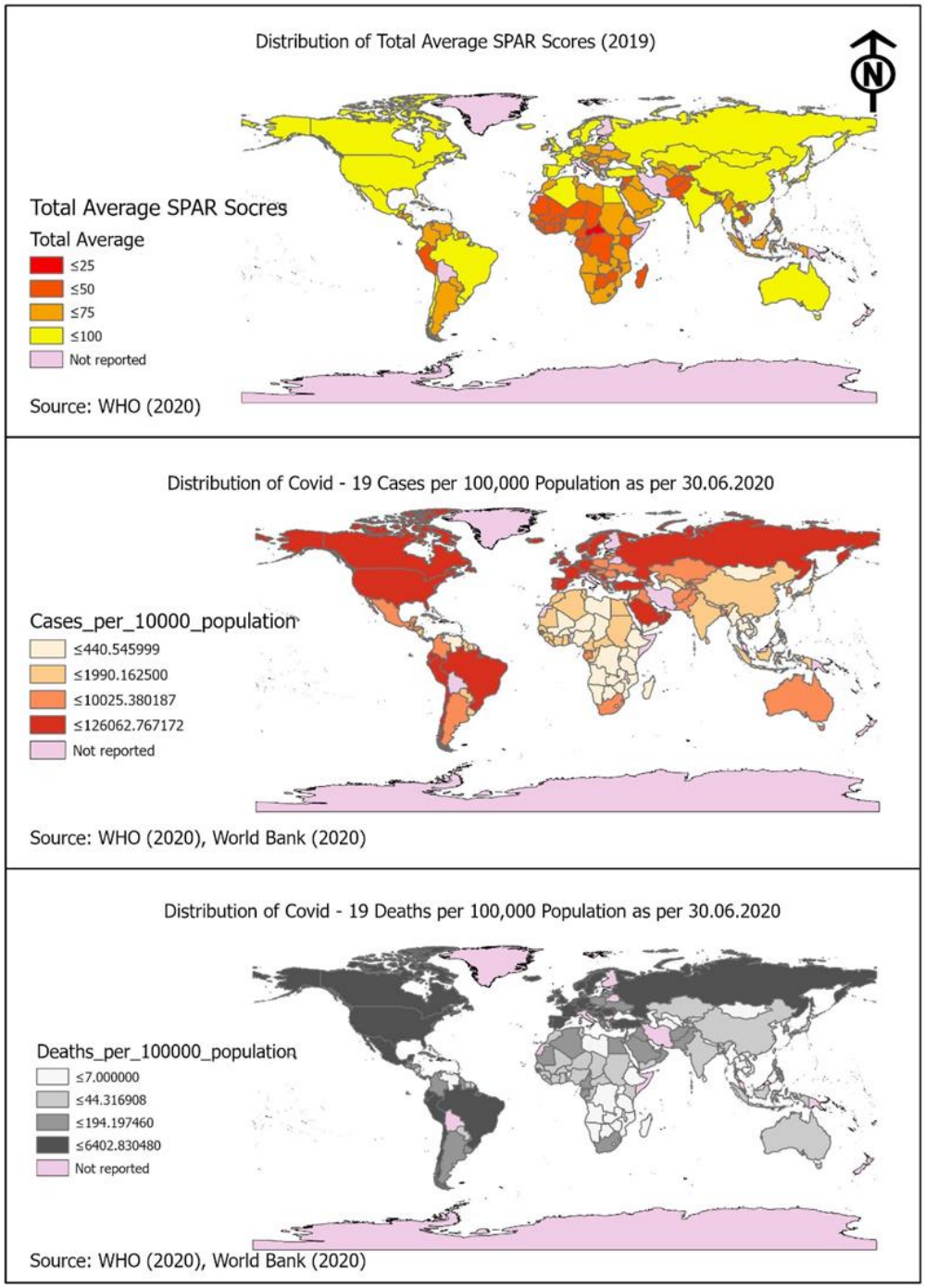
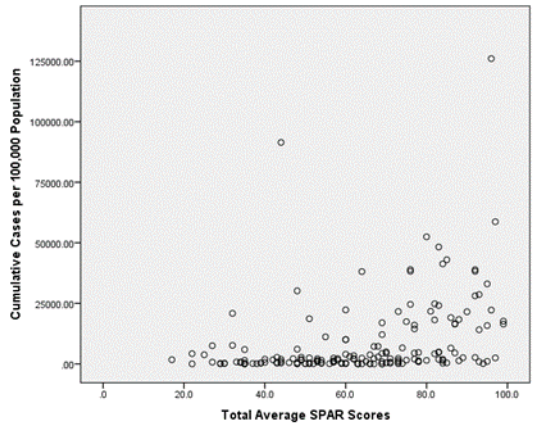



**Figure 1**: Distribution of total average SPAR scores (2019) COVID-19 cases per 100,000 population and COVID-19 deaths per 100,000 population as per June 30, 2020.

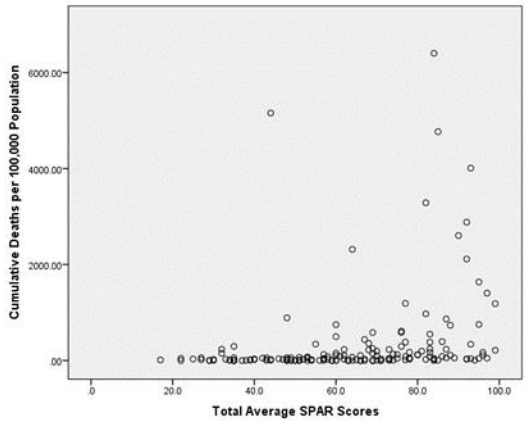
The scatter plots of COVID-19 cases per 100,000 population and deaths per 100,000 population as well as their log transformation against the total average SPAR capacity scores were developed (Figure 2). Scatter plots showed more linear relationships between the log transformed values of cases per 100,000

population, as well as deaths per 100,000 populations, than for total number of cases and deaths per 100,000 population and total average SPAR scores.

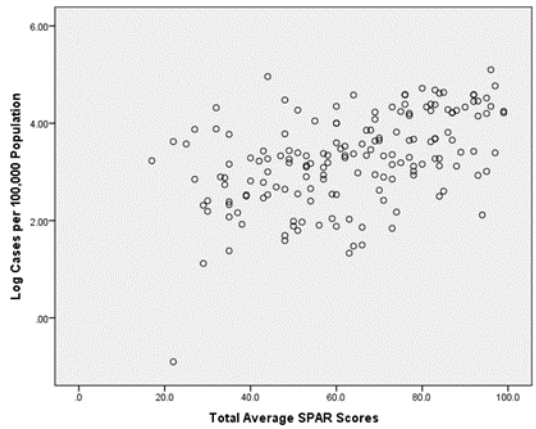
COVID-19 Cases per 100,000 Population




COVID-19 Deaths per 100,000 Population




Log COVID-19 Cases per 100,000 Population




Log COVID-19 Deaths per 100,000 Population

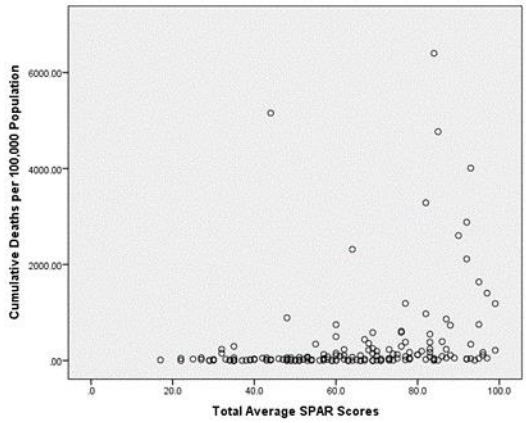



**Figure 2**: Scatter plots of COVID-19 cases and deaths verses total average SPAR scores.

Next, we drew scatter plots to show the distribution of log transformed values of cases and deaths against total average SPAR scores by WHO region (Figure 3). Correlation coefficients were calculated for the association between the log cases and deaths per 100,000 population and the total average SPAR scores by WHO regions (Table 1).

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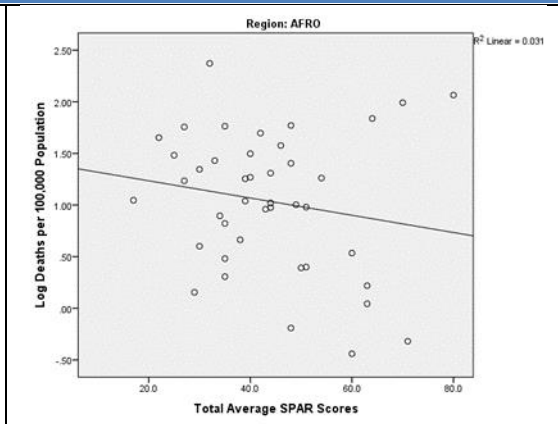
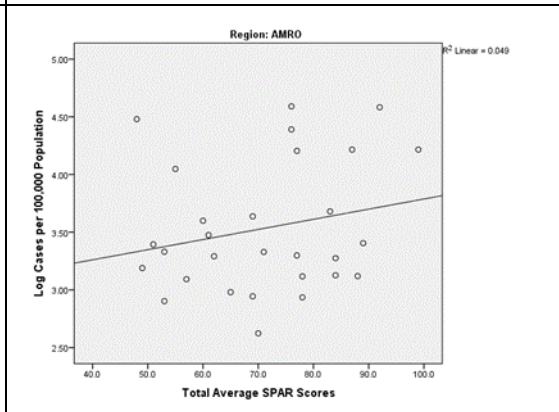
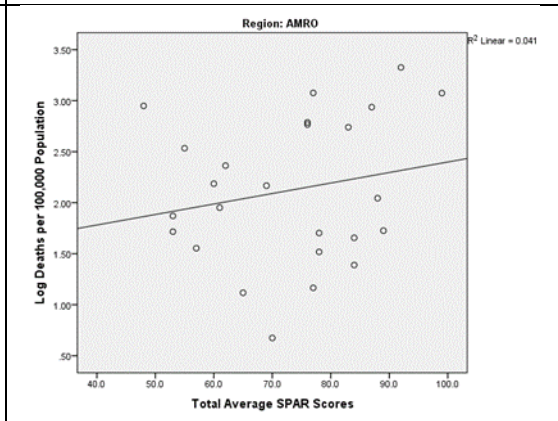
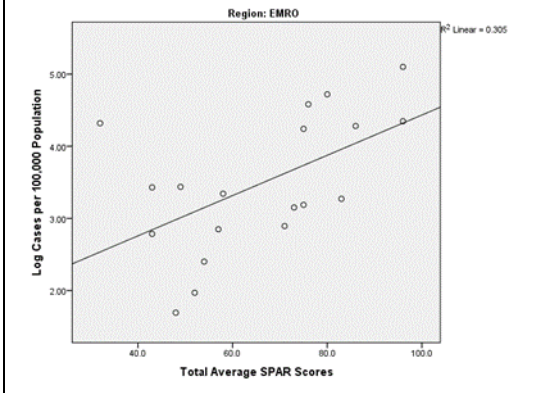
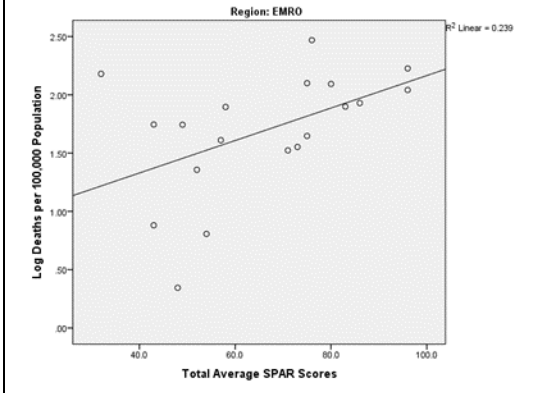
| | | |
|---|---|---|
| AFRO |  |  |
| AMRO |  |  |
| EMRO |  |  |

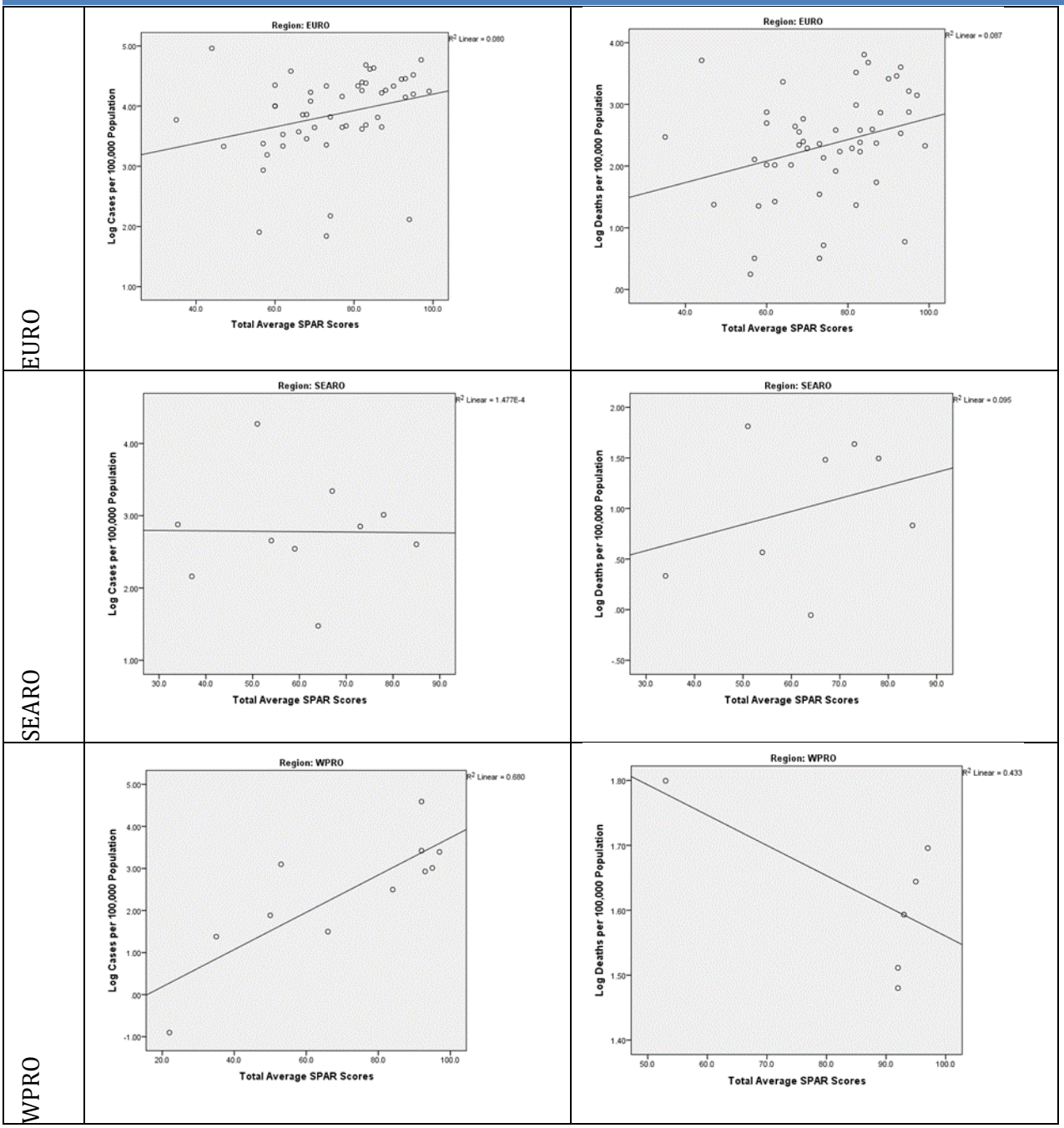



**Figure 3**: Scatter plots for log cases and log deaths per 100,000 population versus total average SPAR scores by WHO region.

Inspection of the scatter plots showed a negative correlation for both log cases per 100,000 population and log deaths per 100,000 population and total average SPAR scores for the AFRO region. Positive correlations were observed for both log cases and deaths vs. total average SPAR scores for AMRO, EMRO and EURO regions. No correlation was observed between log cases per 100,000 population and total average SPAR

scores in the SEARO region, while there was a positive correlation between the log deaths per 100,000 population and total average SPAR scores for the same region. For the WPRO region, a positive correlation was observed for the association between log cases per 100,000 population and total average SPAR scores, while a negative correlation was observed for log deaths per 100,000 population and total average SPAR scores. However, significant positive correlations were observed only for EMRO, EURO, and WPRO regions for both log cases and log deaths per 100,000 population and total average SPAR score ($p < 0.05$). The highest correlation coefficient was observed for WPRO region between log cases per 100,000 population and total average SPAR scores ($r = 0.825$, $0 = 0.002$, $n = 11$). When all WHO regions were considered, significant positive correlations were observed between both log cases and log deaths per 100,000 population and total average SPAR scores.

**Discussion**

While some researches have pointed out deficiencies in IHR monitoring as well as in implementation mechanisms (Tsai and Katz 2018), SPAR is the primary tool used by State Parties to report their performance on adherence to IHR (World Health Organization 2018a). SPAR covers 13 areas that are obligatory to report the ability of State Parties to prepare and respond to Public Health Emergency of International Concern (PHEIC). In contrast, the Joint External Evaluations are voluntary and cover 19 additional areas in more depth.

COVID-19 was declared by WHO as a PHEIC on January 30, 2020 (World Health Organization 2020c). The morbidity and mortality due to COVID-19 had been quite diverse across the countries, with extremely high rates of morbidity and mortality values occurring in certain countries. This study explored how well the SPAR scores from 171 State Parties, as of 17 April 2020, (out of a total of 171 reports, as of 14 July 2020) for reporting year 2019, correlated with the COVID-19 morbidity and mortality across different countries, as per the data available at the end of the first six months of the outbreak.

Since the number of cases and deaths reported needs to be considered in the backdrop of total population of the country, the number of COVID-19 cases and deaths was calculated per 100,000 population. Scatter plots of COVID-19 cases as well as deaths per 100,000 population versus total average SPAR scores showed the need for log transformation of both cases and deaths per 100,000 population to identify correlations.

The research team hypothesised at the outset of the study that there should be a negative correlation between IHR core capacities and COVID-19 morbidity and mortality. This was justifiable, since the countries who report higher IHR capacities are logically likely have less morbidity and mortality since they would be able to better prepare, detect and respond to the outbreak. However, what was observed was quite different.

When assessing correlation between the COVID-19 log cases and deaths versus total average SPAR capacity score, significant positive correlations were observed, though the correlation was only moderate. To understand the correlations better, the analysis extended to look at each of the WHO regions separately. It was found that the correlations were not uniform across the regions for log cases and log deaths. Significant positive correlations were observed for EMRO, EURO and WPRO regions, but none of the negative correlations observed were statistically significant. SEARO did not show almost any correlation between log cases and SPAR scores, while only a positive non-significant correlation was observed for the

same region when considering log deaths per 100,000 population. These findings show the need to consider region as an important factor in examining relationships between individual and indicator SPAR scores, and COVID-19 morbidity and mortality.

There are a four possible explanations for the lack of a negative correlation hypothesised at the beginning of the study. Firstly, there could be biases associated with the COVID-19 cases and deaths reported. COVID-19 is a disease that is highly dependent on accurate investigations for its diagnosis. Hence, countries with higher diagnostic capacity are likely to have higher cases and death reported. Some countries would thus be underreporting COVID-19 cases and deaths, which would have distorted the real picture. Furthermore, associating cases to a particular country is problematic in the wake of extensive migration that occurred during the COVID-19 crisis. For example, cases in returning migrants would have been reported by the receiving country even though the infection occurred in another country, in which the cases were not counted.

Secondly, State Parties may have overestimated their capacity, which would have proven to be failing when a real Public Health Emergency of International Concern erupted. For example, it has been found that self-assessment scores are consistently 1- 1.5 points higher than external evaluations (Tsai and Katz 2018).

Thirdly, SPAR assesses the total average capacity from the State Party as a whole. In contrast, assessing the correlation between specific capacities which are more relevant to COVID-19 such as laboratory surveillance, health emergency framework, and case management, while excluding those related to radiation chemical safety capacity would have been more meaningful. Detailed assessment of correlation between specific capacities or their groups and COVID-19 morbidity and mortality is recommended in future studies.

Fourthly, vulnerabilities, as well as capacities, especially resilience aspects, of communities are not assessed comprehensively by SPAR. For example, the socio-economic status of a country, the health literacy of communities, the affordability and accessibility of health services, and behavioural aspects of the community are all overlooked in the SPAR assessment. In other words, many confounding factors would have contributed to the relationship between the SPAR scores and COVID-29 morbidity and mortality.

It should be noted that, if used proactively, the SPAR self-assessment and reporting process greatly assists countries to become aware of their IHR capacities. Further, the effectiveness of the SPAR tool to capture the capacities must be revisited with the aim of improving the performance of the tool. In addition, IHR capacity influences many factors external to IHR capacity assessment and reporting for country performance.

While some researches have pointed out deficiencies in IHR monitoring as well as in implementation mechanisms (Tsai and Katz 2018), the current study focused on assessing the usefulness of the SPAR tool during the COVID-19 outbreak. This study thus only captures the story in the middle of the COVID-19 pandemic, after six months from its commencement. A repeat of this study will be conducted when the COVID-19 pandemic comes to a halt.

In addition to the national level at which IHR monitoring such as SPAR occurs, there is a need to go down to subnational levels, where more regional disparities exist. It is recommended to revisit SPAR based on

experience with the pandemic. IHR self-monitoring must look further as it considers a multi-disciplinary and multi-sectoral whole of society pandemic preparedness and response approach. In addition to what the State Parties report on IHR capacities, the capacities from the community point of view, as well as from the point of view of stakeholders beyond the governments and its stakeholders need to be taken into consideration when assessing country IHR readiness. Actors such as non-profit organizations, community-based organizations, faith-based organizations and the corporate sector need to be engaged to ensure that such assessments realistically portray the capacity of a country.

One innovative suggestion is to complement SPAR with a Community and Civil Society Self-Assessment Annual Reporting (CCSAR) tool and a mechanism, which has been used in other areas such as human rights monitoring (Wijesekara 2020). Further research is needed to assess the correlation between SPAR scores and the JEE Scores as well as their correlation between COVID-19 morbidity and mortality.

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