

Unborn Tomorrow: Pandemic and Its Impact on the Next Generation



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We are in the fourth wave of the COVID-19 pandemic. For two years since its outbreak, the virus has been unhurriedly and untiringly spreading with the number of cases, hospitalizations, and deaths still soaring to staggering heights. Nearly 300 million have been infected and more than 5 million lost worldwide as of the end of 2021, and the number continues to increase. Societies have taken containment measures to curb the spread of the disease including a complete lockdown to restrict physical contacts to the full and a variety of malleable social distancing. Businesses shut down, schools were closed, and people were thrown out of work. The responses to the disease caused a sudden and deep economic contraction around the world.

Since the arrival of the unordinary health crisis, research has proliferated with respect to its effects on different dimensions of societies. Individuals experienced economic hardship and reduction in subjective wellbeing. In impoverished environments, children missed out on education, the proportion of households facing food insecurity rose, and additional caregiving responsibilities widened gender inequalities. Moreover, despite the

progress for a few decades, poverty and inequality increased again.

Will the pandemic ever be completely over? As the ongoing pandemic is not the first of its kind, the answer can be sought from history. Evidence from epidemiological and health economics research on the past suggests that the damage caused by the pandemic can be long-lived. The deadliest pandemic of the 20th century akin to COVID-19 is the H1N1 influenza, or the Spanish flu that broke out in March 1918 and subsided by summer 1919. The pandemic occurred in three waves, of which the second was most severe. It is estimated that 500 million or one-third of the world's population became infected and at least 50 million died worldwide with the mortality rate reaching 10%.¹ Korea was no exception of its influence. The virus, known as *influenza of year Muo*, infected 16% of the population (2.9 million out of 17.6 million people) and caused 140 thousand deaths in the Korean Peninsula.²

The pandemic a century ago, often used as a quasi-experiment in academic studies with its nature of being unexpected, short, and severe, offers two lessons. First, the 1918 pandemic had unequal impacts on different social groups. In the U.S., the mortality rate of the pandemic differed across different regions and was associated with the indicators of poverty such as literacy, homeownership, and unemployment (Grantz et al. 2016). Second, the pandemic led to long-lasting consequences among the affected population. The cohort exposed to the Spanish flu in utero had higher rates of physical disability, lower educational attainment, and a lower level of earning in their later life (Almond 2006). The long-term effects of influenza exposure on adult health, education, and employment have been found for various parts of the world (Neelsen and Stratmann 2012; Nelson 2010; Lin and Liu 2014). In summary, a seemingly transitory shock can generate variations across people with different coping abilities and have impacts on the next generation.

One way that the pandemic's legacy is transferred to the next generation is explained by the fetal origin hypothesis (Barker 1990), which postulates that initial health endowment is an important determinant of health in later life. Prenatal exposure to an adverse shock is associated with genetic scarring that determines health status at birth predictive of adult health and socio-economic outcomes. A number of studies test the fetal origin hypothesis using diverse events such as war, disease, economic crisis, and natural disasters. Although prenatal conditions, approaches of analysis, and magnitudes of effects vary across the studies, they

¹ Centers for Disease Control and Prevention website. <https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html> (accessed January 5, 2022)

² Song, Hong Geun. 2020. "스페인독감, 식민지 조선을 휩쓸다 [Spanish flu sweeps through colonial Joseon]" *Shindonga*. (Jan 31)

come to a uniformity in their conclusion: fetal adversity has significant negative impacts on birth outcomes, and consequently on the later-life outcomes. Additionally, the finding that the negative effects of in-utero exposure to an adverse shock are larger for the mothers with low levels of socioeconomic status supports the intergenerational persistence of poverty. Inequality at birth may persist throughout lifetime.

Two mechanisms underlie the linkage between the pandemic and fetal development: maternal stress and malnutrition. In-utero exposure to elevated cortisol through a mother who undergoes a stressful situation increases risk of having low birth weight and reduces educational attainment (Aizer et al. 2016). The ubiquitous fear and anxiety from everyday tragedies of infection and sickness, grievance from deaths, social isolation, and job loss brought by the pandemic is traumatizing a large number of people including pregnant mothers. Furthermore, mothers exposed to the pandemic, particularly in developing countries, have restricted access to medical or nutritional care, while intrauterine nutrient consumption plays a dominant role in determining adult health status (Behrman and Rosenzweig 2004). The nine months in utero are one of the most critical periods for human capital formation, shaping health trajectories in a person's life. Yet, under this health crisis, poor children are more likely to be in poor health at birth because mothers are less able to provide a healthy fetal environment.

The factors disruptive to human capital development of the next generation are the deep economic recession and an upsurge in food insecurity in developing countries. For example, Africa is most hit by the COVID-19-induced economic downturns, and is experiencing the largest increase in undernourishment (FAO 2021). The increase in the proportion of the food-insecure population in the continent has accelerated during the pandemic.³ Disruption in food supply and income shock in both supply and demand sides restricted farm production and food intake. Lockdown measures more severely affected low-income households with high dependence on labor income or engaged in the informal sector. The income shock jeopardized the food security of the poor confronting difficulties in consumption smoothing. For them, a viable strategy is to reduce food intake or change dietary patterns. Given that the low level of the vaccine rollouts is slowing down the economic recovery of the continent, the situation will be aggravated for the meantime.⁴

The pandemic is not merely a bout of health crisis; the scars it has inflicted may linger for

³ Africa has the largest share of population with chronic food insecurity. In the continent, the percentage of population with food insecurity steadily increased with 52.7% in 2018, 54.2% in 2019, and 59.6% in 2020. Source: FAO

⁴ In Africa, the share of people fully vaccinated against COVID-19 reached only 9.5% by January 2022. Source: Our World in Data

years or even for decades. The repercussions of the pandemic today will be borne by the generation tomorrow. Learning from the past, we can make an educated guess that the current pandemic may lead to perpetuation of inequality for the next generation. In terms of health effects, the pandemic affects all individuals, but the social and economic consequences of the pandemic will be disproportionately detrimental to people living in poverty or in vulnerable situations. Likewise, developing economies are expected to bear larger costs of the pandemic and economic recovery will likely be uneven across countries, which will lead to greater global inequality in the coming years.

Tomorrow is unborn yet and we can still enhance tomorrow for the unborn. While dealing with the menace of the pandemic, preventing wide divergence across different social groups not only in the concurrent generation but also in the next generation is paramount. In this regard, priorities would be providing primary maternal and child health and nutritional cares targeting people in poor and fragile situations and mending economic and social conditions of the vulnerable population. The economic benefits of appropriate interventions to improve prenatal development are well documented. Examination of the long-term effects of today's pandemic on socio-economic outcomes of the future generation is yet to be settled. **KIEP**

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