

Beyond the biomedical effects: Health disparities and missing components of COVID-19 mitigation in Bangladesh

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Erin Wettstone
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I. Introduction

Bangladesh is one of the most densely populated countries in the world, with a population of 166 million people and a population density of 2889.45 people per square mile (United Nations, 2019). A rich appreciation of culture and tradition stems from this dense population that is 90% Muslim and 98% ethnic Bengali (World Population Review, 2021). Most people live in rural areas, but about 21 million people live in the capital city of Dhaka (Lansat, 2018). Overcrowding and slum developments have led to many health issues in Bangladesh and many people fall below the poverty line, about 22 million (World Bank, 2018b). Moreover, patriarchal lifestyles and gender roles are still practiced in many areas of the country and domestic violence and gender inequality are commonly experienced by women (Lonely Planet, 2021). Despite these hardships throughout the country, Bangladesh has made great strides in increasing health measures for the growing population. From 1990 to 2006, the mortality rate of children under the age of five decreased from 151 to 65 deaths per 1,000 livebirths and during this same time period, immunization rates increased from 54% coverage to 81.9% coverage (Sayem et al., 2011).

While the Bangladesh government, United Nations, and several assisting non-government organizations have worked hard to advance public health progress and protect the wellbeing of the Bangladeshi people, the recent emergence of the coronavirus disease 2019 (COVID-19) has threatened their socioeconomic status and has taken its toll on many public health services. COVID-19 is an airborne disease caused by the severe acute respiratory syndrome 2 (SARS-CoV-2) strain of coronavirus and was first discovered in Wuhan, China

during the December of 2019 (WHO, 2020a). Bangladesh experienced its first recorded case of COVID-19 on March 8, 2020 and has since seen more than 770,000 cases and 11,000 deaths (GardaWorld, 2020; WHO, 2021b). It is evident that the disease has had a large impact and still these numbers are likely underestimated due to testing accessibility and discrepancies in data reporting (Biswas et al., 2020).

While the death toll of COVID-19 is significant, analysis of past outbreaks, like Ebola, have shown that the deaths caused by the socioeconomic impact of the pandemic will far outweigh the death caused by the disease itself (Elston et al., 2017). This requires attention not only to the biomedical treatment of COVID-19, but also the sociocultural recognition of health disparities that the pandemic has progressed. Bangladesh, like many other developing countries, faces challenges with poverty and preexisting health disparities that make their response strategy different from higher-income nations. Developed countries, like the United States, have designated the COVID-19 vaccine as the end-solution to the pandemic. They have thrown millions of dollars into the development of big-pharma vaccines and vaccine roll-out with hopes that herd-immunity will subside the negative effects of the pandemic. However, the evident impact of COVID-19 on socioeconomic health disparities in Bangladesh shows that global health solutions will need to reach far beyond the scope of the vaccine and address the impact on other public health services as well. The decline in these services has produced a very real burden on people who already experience obstacles to good health, and these obstacles need to be identified in order to restore access to vital resources. This paper moves past the biomedical effects of COVID-19 and identifies three major health disparities caused by COVID-19 mitigation strategies in Bangladesh: 1) Decline in maternal, and child health services, 2) Disruption of pediatric vaccination programs, and 3) Increased food insecurity. Actor Network Theory (ANT)

will be used as a framework to help identify the power-imbalance among COVID-19 solutions and discuss how forgotten actors can be translated into future pandemic management strategies.

II. Literature Review

Decline in maternal and child health services

On average, women have about 2.036 children in Bangladesh and in general, family life and children seem to be greatly valued and incorporated into Islamic religion (White, 2012; World Bank, 2018a). As mentioned before, Bangladesh has taken great strides in reducing maternal and infant mortality rates over the past two decades and is often viewed as a model for reaching Millennium Development Goals in low- and middle-income countries. Prior to the COVID-19 pandemic, the improvements in child and maternal mortality rates have been attributed to both an increase in the quality of health facilities and an increase in contextual factors such as women's education and average household income (El Arifeen et al., 2014). The government of Bangladesh has played a major role in implementing major policy formulations such as the 2001 National Strategy for Maternal Health and a series of five-year development programs that have been implemented by the Ministry of Health and Family Welfare (MoHFW) since 1998 (El Arifeen et al., 2014; Government of the People's Republic of Bangladesh, n.d.). Private facilities and NGO facilities have also played a major role in providing essential Comprehensive Emergency Obstetric Care (CEmOC) and normal delivery services (El Arifeen et al., 2014).

While these initiatives have offered great value to the health and wellbeing of many women and children in Bangladesh, COVID-19 management strategies have recently threatened the source of these improvements and allude to the health obstacles that were encountered over

two decades ago. The actors involved in strengthening these services will need to make the reinforcement of maternal and child health services a priority when developing solutions for COVID-19 management. On March 26, 2020 the Government of Bangladesh enforced a mandatory lockdown that limited public transportation, non-essential services, restaurants, and places of worship and enforced mask wearing and limited people movement (Kamruzzaman & Sakib, 2020). The lockdown lasted until May 30, 2020 and had a severe effect on the overall economy of the country and physical access to maternal and child health services. It was reported that the use of child health services was decreased considerably, that a significant number of at-home births occurred without the support of skilled birth attendants, and that many doctors, nurses, and midwives stopped practicing in hospitals and private practices or had to shift their services toward COVID-19 patients (Ahmed et al., 2020; Ahmmed et al., 2020). Moreover, child education was interrupted, which impacted their mental health and amplified the threat of preexisting at-home adversities. Many patients feared the risk of contagion and stigma that was placed on health services during that time, and as a result suffered at home. One study by the UN Population Fund provides a personal account of a 25-year-old Bangladeshi woman named Sheuly who was rushed into a Dhaka hospital, in-need of emergency treatment for post-partum hemorrhage after giving birth at home because she believed it would be a safer environment to give birth in than the hospital during the pandemic (De Beni & Maurizio, 2020).

The same UN study showed that a 20% decline in the use of three key services - births assisted by skilled health-care providers, institutional delivery and access to contraception – would lead to a 17% increase in the maternal mortality ratio in Bangladesh, among other countries (De Beni & Maurizio, 2020). A 17% increase is equivalent to 25,493 additional maternal deaths. Threats to the same factors that have improved child and maternal health over

the past two-decades could potentially regress the health of the country and need to be addressed when creating solutions to the pandemic. It will require the aid and collaboration of the Government of Bangladesh, private healthcare providers, and NGOs to ensure the safety and wellbeing of these programs.

Disruption of pediatric vaccination programs

During the mandatory lockdown, Bangladesh saw a drastic decrease in child immunization rates, even though the national immunization program continued providing their services. The national immunization program aims to reach 3.8 million children per year, but in April and May 2020, over 284,000 children missed their pentavalent vaccine, which is nearly half of the monthly target level before COVID-19 (Selim & UNICEF, 2020). The diseases that the pediatric vaccines protect against, like measles meningococcal A, yellow fever, and rubella, are highly dangerous to children under the age of 5 and potential outbreaks of these diseases could cause a high mortality and morbidity burden. This is especially true in Bangladesh, since vaccination coverage has been shown to have a strong negative correlation (-0.923) with child mortality rates in the country (Ahmmed et al., 2020). The drop in vaccination rates in Bangladesh has been attributed to parent's fear of leaving the house and unawareness that immunization services were continuing (Selim & UNICEF, 2020). Other sources of disruption to immunization services include low availability of personal protection equipment for health workers, travel restrictions, and low availability of health workers (WHO, 2020b). It is the responsibility of the Bangladesh Ministry of Health and Family Welfare (MoHFW) to maintain these programs during the pandemic and also to ensure that individuals who missed their vaccines are being recorded and reached out to. Other non-governmental organization such as the

WHO, UNICEF, and GAVI also play a role in supporting routine immunization services and have both the funding and the personnel to support reparations to the disruption of vaccine services. These organizations had already established foundations in Bangladesh before the pandemic began and were in fact instrumental in helping to bridge the immunization gap after the lockdown had closed (Selim & UNICEF, 2020).

Of other concern, the Government of Bangladesh decided to postpone its yearly measles-rubella campaign, which was scheduled for March 2020. This campaign usually targets 34 million children between the ages of nine months and nine years and is imperative to protecting them from the deathly effects of measles and rubella (Selim & UNICEF, 2020). The temporary postponement of vaccines did in fact lead to several small outbreaks of measles throughout the country that were originally of high concern, but were later suppressed. Of greater concern is the long-term impact of reduced routine immunization programs. While reduced coverage may not have immediate effects, it has been shown through models that reduction of these routine immunization programs could cause a significant increase in mortality rates by 2028 and 2030 in Bangladesh (Gaythorpe et al., 2021). It is therefore the more pertinent responsibility of the Bangladesh government and vaccine support programs to ensure the recovery of national immunization campaigns like the measles-rubella campaign.

Increased food insecurity

The World Health Organization claims that food security exists when all people, at all times, have both physical and economic access to enough food for an active and healthy life. Food availability, access, utilization, and stability are the four main components of food security (WHO, 2021a). Over the past two decades, Bangladesh has excelled in their ability to stabilize

food availability by reaching self-sufficiency in rice, meat, egg and fish production. Moreover, they have nearly tripled their rice production over the last 30 years, which is significant because rice is the staple food for many people in Bangladesh and makes up about 70% of their daily caloric intake (ADRA, 2020). While this is significant progress, Bangladesh still ranks relatively low on the global food security index, 84th out of 113 countries, and faces challenges to providing equitable food access and distribution (Economist Intelligence Unit, 2020).

Vulnerabilities in food access have only been exacerbated by the COVID-19 pandemic and have been particularly harmful to the most vulnerable and already impoverished populations. The lockdown was particularly dangerous because during this time, people movement was limited and road closures caused food transportation barriers between rural and urban areas. This caused farmers to drop their prices in sectors like the vegetable and chicken industry and led to a great amount of waste in the dairy industry (Zabir et al., 2020). During this time, the loss of income set many farmers back and threatened their own food security in addition to residential consumer threat. One personal testimony states that during the lockdown in April and May, about 80-85% of residents were stuck inside the slum with no work or income, so people were more at risk of dying from hunger and poverty than the disease outbreak itself (Ahmed et al., 2020). The response of the Government of Bangladesh was much needed and on April 12, 2020 decided to rollout a stimulus package to farmers to boost the agriculture sector. The stimulus was equivalent to about 600 million USD and provided allocations for things like fertilizer subsidy, crop harvesting and seed distribution (TBS Report, 2020).

Following the lockdown, the economy continued to experience harmful surges. The consumer demand increased with the fear of non-availability of essential foods and producer supply decreased under the suspension of production and shortage of raw materials (Lalon,

2020). A combination of these two factors caused food prices to increase and created financial barriers to food access for those who could not afford to keep up with the rising prices. It was shown that 24% of rural and 14% of urban families reduced their daily meals to 2 or less in Bangladesh (Khan & Jahan, 2020). These families therefore faced the risk of nutritional deficiency and malnutrition which can lead to child wasting or long-term stunting. Child wasting rates have been of particular focus during the pandemic since wasting can develop more rapidly and has higher contribution to short-term child mortality rates. While COVID-19 does not cause direct physiological changes that lead to malnutrition, the socioeconomic impact of economic deficit and poor quality diets can largely threaten child mortality rates. The modeling study conducted by Robertson et al. accounted for a 10% and 50% increase in global wasting prevalence due to the effects of COVID-19 and reported an increase of 40,000 and 2,000,000 excess child deaths respectively (Robertson et al., 2020). It is therefore the important responsibility of the Government of Bangladesh and supporting NGOs like the World Food Program to implement new policies that will support food availability and food access to all during the pandemic (WFP, 2021).

III. STS Framework

Introduction to Actor Network Theory

Throughout the preceding review of the decline in maternal and child health services, disruption of pediatric vaccination programs, and increased food insecurity in Bangladesh, one main theme emerges from the literature: a general removal of power. Organizations and government initiatives that have progressed the health and wellbeing of the people of Bangladesh encountered barriers to their agency when COVID-19 management policies were enforced. The

systemic causes of these barriers are socially, culturally and politically ingrained, and Actor Network Theory will be used to recognize how power can be lost in an exclusive network of relationships.

Actor Network Theory (ANT) was first defined by French philosopher, Bruno Latour, as a powerful tool that analyzes the complex relationships between government, technology, knowledge, texts, money and people. It was created to analyze the emergence of the sociotechnical world not through one perspective, but through a combination of economic, political, and social perspectives (Cressman, 2009). In the context of ANT, actors are both human and nonhuman, organic and inorganic, and all have an important role to play in constructing a complex network. One of the abilities of ANT is to explain the shifts in power dynamics between different relationships through the translation of actors. Latour explains that “power is achieved through associations, and the actor-network theory illustrates how the use of power depends upon the actions of others in the network” (Cressman, 2009). However, one can also look outside the network and recognize that some actors are excluded from the network due to an absence of power. If the use of power depends on the actions of others in the network, then the actors that are not accepted into the network have no use of power. Power is not a given, and “translation is a process before it is a result” (Callon, 1984).

In fact, there are several steps to the successful translation of an actor into the network, including problematisation, interessement, enrolment, and mobilization. During the problematisation phase, the actors and nature of the problem have to be defined in a way that makes the actors indispensable to the network. Then, the roles of the actors must be well defined and stabilized among the other actors through the process of interessement. However, actors may be rejected during either of these phases, and it is not until the enrolment phase that actors and

their roles are accepted or not: “Interessement achieves enrolment if it is successful” (Callon, 1984). The last phase, mobilization, involves a spokesperson for the actor-network that will justify the actors, their alliances, and mobilize the goal of the network. Furthermore, there involves a fifth element of translation, dissidence, in which established networks can disband due to controversies and non-compliance of other actors or misrepresentation of the network during mobilization (Callon, 1984). Conclusively, ANT provides a systematic framework in which the power relationships between actors can be defined and also displaced among the social, cultural, and political context of society. The goal of the following ANT analysis and discussion is to first identify the power imbalance in the actor network that was constructed for COVID-19 management in Bangladesh, and then discuss the potential for future solutions to translate forgotten actors into pandemic mitigation plans.

IV. Data Analysis

Actor Network Theory Analysis and Discussion

The main actors that were translated into the actor network for COVID-19 management in Bangladesh were lockdown reinforcements, resources and personnel for COVID-19 treatment, increased COVID-19 PCR surveillance, economic aid supplements, COVID-19 vaccines, the Bangladesh Ministry of Health, policy makers, and government officials. The translation of relationships and interactions between these actors empower each other by granting or sharing resources and funding. In the actor network, the roles and definitions of these actors are accepted. They have been enrolled in the network, represented well, and accepted by society, and their power is drawn from these associations. In contrast, actors such as maternal and child health care centers, skilled birth attendants, child immunization programs and campaigns, food

access, farmers, food markets, low-income families, children, mothers, and babies were not included in the actor network. These actors instead have no connection to the actors with resources and in some cases are cut-off from funding or programming that was supplied by actors within the network. For example, the Government of Bangladesh decided to postpone its yearly measles-rubella campaign, which completely cut off the 34 million immunizations and funding that would have protected children from deadly diseases (Selim & UNICEF, 2020). Furthermore, no connection was made between the lockdown procedures and the transportation needs for most vulnerable populations such as mothers and children seeking health services or impoverished communities seeking food access (Ahmed et al., 2020; De Beni & Maurizio, 2020). Little was implemented to address the risk of contagion and stigma that was caused by increased COVID-19 reinforcements, which impacted the birth and delivery options of expecting mothers (Ahmed et al., 2020). These are all examples of dissidence, where controversies and misrepresentation of the actors have caused them to be displaced from the network.

The systematic perspective of ANT reveals that COVID-19 management is actually a process of networking between actors and that a biased network makes certain health issues and people groups invisible to the health policy agenda. The network shows which actors were considered in the development of COVID-19 solutions and which were not. This type of exclusivity does not occur spontaneously, but by the choice of governing bodies that are influenced by systematic prejudices. Religious and patriarchal influences still evade the decision-making roots of many in Bangladesh. The power imbalance that stems from these ingrained ideals is evident in the exclusive nature of actor networks like COVID-19 management. The debarring of connections demonstrates the ability of one actor to fulfill their will over another

and explains how the actions of excluded actors are bound by a lack of connection and not out of free will.

Therefore, future solutions for pandemic mitigation in Bangladesh need to consider the proper methods for the problematisation, interessement, enrolment, and mobilization of vulnerable health programs. For actors like maternal and child health services, pediatric vaccination programs, and food security initiatives, this means that governing bodies need to emphasize the importance of these programs in a way that makes them indispensable to the network. Organizations like the Government of Bangladesh, Bangladesh Ministry of Health and Family Welfare, United Nations and NGOs need to solidify their role on the policy agenda, ensure their enrolment to the network, and represent them well during the mobilization process so that they will be sustained during future pandemics and not displaced. Furthermore, funding and protective policies will help prevent dissidence of these programs and ensure their agency to help vulnerable populations in Bangladesh.

V. Conclusion

Implementing ANT for the analysis of health disparities caused by COVID-19 management policies is critical to understanding how the disease operates beyond biological effects and produces wider societal implications. Bangladesh, among other low- and middle-income countries faces health disparities that need to be taken into consideration when creating COVID-19 solutions. It is the more vulnerable health programs like maternal and child health services, child immunization programs, and food security initiatives that often get overlooked when emerging infectious diseases take control of the health policy agenda. Governing bodies need to include these vulnerable health programs in the actor network so that their agency is not

relinquished and their power continues to improve the health and wellbeing of the populations they serve.

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