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Done by: Chang An Le Harry Jr (Lecture Group 3)

Q1

COVID-19 has worsened health disparities within countries based on ethnicity, as the latter often corresponded to socioeconomic status (SES) levels. In general, lower-income minorities are more prone to chronic illnesses and would require more care. This is especially true for illegal immigrants who tend to avoid local healthcare facilities altogether to prevent future deportation. For instance, in the US, African-American and Hispanic minorities are more probable in living in congested environments and working in blue-collar jobs compared to the Caucasian majority. These minorities tend to travel by bus or train with large crowds, as many of them do not own private vehicles. By considering such conditions, these individuals would be more likely to fall ill and even contract airborne illnesses, including COVID-19 (Lopez, 2021). Furthermore, recent COVID-19 data has shown that mortality and hospitalisation rates have an association with Black or Brown ethnicities, also commonly described as the “ethnicity effect”. US hospitalisation rates were much higher amongst the African-Americans (1.8) and Hispanics (1.6) compared to the Whites (0.5) when considering these ethnicities’ prevalence ratios (Hughes et al., 2021). It was also reported in July 2020 that 1.6 million Hispanics in the US were deprived of their healthcare coverage due to COVID-19 (Gangopadhyaya et al., 2020). As the aforementioned argument demonstrated that ethnicity is often stereotyped as an SES indicator, it is proven that ethnic minorities within countries generally have poorer health outcomes. Therefore, COVID-19 has indeed widened the health disparities in terms of ethnicity within countries, particularly when comparing the Whites and the Blacks/Browns.

COVID-19 has also widened health disparities within countries based on gender. Traditionally, women would tend to be at a physical disadvantage compared to males, often leading to a greater risk of undergoing various health problems for the former. Based on biological research, women have a higher chance of experiencing musculoskeletal diseases including osteoporosis, and subsequently cardiovascular health problems as compared to men. This gender health disparity is further exacerbated especially with the introduction of lockdowns and travel restrictions due to COVID-19, limiting the healthcare required for treatment, especially amongst females (Guerrina, 2021). Besides physical well-being, the mental health aspect has also been adversely affected especially amongst women as compared to men. In a 2020 Jordan study, research has revealed that almost 40% of locals have experienced anxiety from COVID-19 related quarantines. Amongst these individuals, data has showed “that psychological stress levels were significantly higher in women, especially in unmarried or younger than 50 years” (Massad et al, 2020). In the UK, it was also discovered that domestic violence rates

have more than doubled due to the COVID-19 pandemic. The typical pre-pandemic death rate of about 6 deaths (of women and children) per month due to such violence peaked at 16 during the first month of lockdown in the country (Bambra et al., 2021). Again, this increased domestic violence is often attributed to social isolations which have aggregated the mental well-being of families during the pandemic. In summary, case studies have shown that women are likely to experience more long-term physical and mental health problems than men, and this gender health disparity has evidently increased due to COVID-19.

To conclude, the worsening gender health disparity due to COVID-19 is more serious as compared to that of ethnicity. Women, often appointed the role of caregivers to children, are essential in growing our global population of future generations. However, given the fact that approximately 70% of healthcare workers are female worldwide (Salles, 2021), the latter is at a much higher risk of exposure to COVID-19, which would be detrimental to human reproduction in order to maintain or grow the global population due to the lives of females lost to the pandemic. On the other hand, the worsening ethnic health disparity due to COVID-19 would be considered relatively less serious as many governments worldwide are experiencing related issue(s) that are either similar or exactly the same. They can collaborate with each other in an international forum and come up with a general solution, before tweaking them based on their respective contexts to help close this ethnic gap in their individual countries.

Word count: **665 (excluding in-text citations)**

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Q2

An obstacle that may undermine national efforts aimed at reducing childhood obesity in high-income countries would be the lack of support by parents to cultivate healthy eating habits amongst children. As children are deemed rationally unprepared to make their own decisions at a young age, the actions of their parents are imperative in influencing their children's behaviours. This is especially the case when children view their parents as their role models who they would like to develop similar traits with when they grow up in the future. In a 2019 Singaporean study, parents conveyed various difficulties in trying to promote healthy eating habits to their children. Parents preoccupied with work and other commitments do not have adequate time to prepare healthy food for their children. They would often opt to eat outside or order takeaways instead of consuming home-cooked meals, which increases the likelihood of fast food consumption instead. Furthermore, they cited the dietary preferences for less healthy food by either their spouse or their own parents that would compromise their own efforts in promoting healthy eating to their children (Chong, 2021). These observations are also similar in other high-income countries in the European Union (EU), including Germany and Italy. In a 2018 online survey targeted at 187 policy-makers and stakeholders from 12 EU member states, 67.6% of the respondents agreed that the lack of parental support contributed to the prevention of childhood obesity, ranking it amongst the top three reasons from a possible nine listed in the survey (Abu-Omar et al., 2018).

Another obstacle that may hinder national efforts to reduce childhood obesity in high-income countries would be the difficulty in enforcing regulations against unhealthy food marketing. As most food companies aim to generate profits by maximising revenue and minimising costs, they may not necessarily be obliged to promote healthier foods, especially when the latter may not be as popular amongst citizens compared to fast foods and sugary beverages. In fact, eating healthily is considered a more costly option due to the higher cost required to farm fresh fruits and vegetables, even in high-income countries such as the USA (Sotirovska & Philip, 2018). Moreover, promoting healthier foods is considered high-risk, especially when competing firms choose to continue marketing their less healthy yet popular products instead. To illustrate, PepsiGo had unsuccessfully attempted to market healthier products in the past, resulting in a fall in revenue and market share. It had to recenter its focus to its main products (e.g Cheetos, Doritos and Pepsi) to gradually regain its position in the food industry (Fleming-Milici & Harris, 2020). Even with increasing regulations against unhealthy food marketing in different countries, the wide usage of social media platforms especially amongst

today's children is a loophole constantly exploited by food companies to maximise their outreach and promote the sale of their products. As such, the difficulty in regulating unhealthy food marketing deters national efforts to reduce childhood obesity, particularly due to firms' common aim to maximise profits by any means necessary, even at the possible expense of their consumers' long-term health.

In my personal opinion, the lack of parental support to promote healthy eating habits is a more difficult obstacle to overcome compared to the difficulty in regulating unhealthy food marketing when it comes to reducing childhood obesity in high-income countries. Given the fast pace of living in metropolitan areas, it is understandable that citizens living in such conditions may not necessarily afford the luxury of time to prepare healthy meals diligently for their children, especially when they are working. In addition, parents would struggle to constantly find the motivation to impose a healthy diet on their children or themselves all the time. A sudden slip-up in maintaining such efforts may lead to a rebound towards unhealthy food consumption once again, which is especially detrimental for parents as their children would likely be influenced to follow suit. On the other hand, tackling unhealthy food marketing may be an easier problem to overcome. As online media is often referred to as a double-edged sword, it can either be used by firms to positively promote healthy eating habits or encourage unhealthy food consumption instead. Therefore, it would ultimately be up to the individual's self-control to decide which form of influence to follow when it comes to making eating decisions.

Word count: **700 (excluding in-text citations)**

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Q3

Contact tracing was one method which demonstrated the usage of healthcare data analytics to help tackle the pandemic. The idea behind contact tracing revolves around the usage of mobile applications for users to transmit their localisation data as unchangeable time-stamped records into a common database. This database will then be used as an investigation system by governments to trace persons who either had contact with newly infected patients or had frequented high-risk areas. Collecting such data also ensures that users suspected of contracting COVID-19 are not contravening self-isolation protocols, as their locations are constantly monitored to deter them from doing so (Benreguia et al., 2020). Moreover, Asian countries such as Taiwan and South Korea have resorted to tracking their citizens' movements without the latter's consent to maximise the effectiveness of contact tracing efforts (Nageshwaran et al., 2021). In particular, the TraceTogether mobile application, developed in Singapore, has greatly assisted the country in identifying suspected and confirmed COVID-19 cases. Using this application involves the exchange of Bluetooth signals between phones within range of each other to discover nearby users. With the increasing number of confirmed cases in Singapore, the usage of TraceTogether application was eventually made compulsory for users to check-in when visiting high traffic areas such as shopping centres and workplaces using the in-built SafeEntry system within the application for them to monitor their whereabouts. The local authorities commended TraceTogether for helping to "reduce the average time taken to contact trace from four days to less than 1.5 days" (Low, 2021), indicating its usefulness in Singapore's battle against COVID-19.

Data analytics also contributed to healthcare decision-making by helping countries to "evaluate the effectiveness of COVID-19 control measures" (Alsunaidi et al., 2021). To illustrate, a study on China published in March 2020 concluded that restricting and relaxing quarantine measures at different timings greatly impacts the trend in the number of daily cases in the subsequent stages of the outbreak (Chen et al., 2020). Using the data of daily confirmed cases reported in Hubei, the researchers ran a simulation using the C-SEIR mathematical model (Zhang et al., 2005) to predict different peak periods of the pandemic in the region. The simulation revealed that adjusting the lockdown start date earlier or later by two days could have decreased or increased the number of confirmed cases by almost twice the actual amount respectively. Furthermore, the study showed that the relaxation of such restrictive measures should occur in a more controlled manner to minimise the number of infections and avoid experiencing subsequent large waves of infections. In correspondence to the study's results,

China has adopted a “zero tolerance policy” as its main public health approach, as its main priority remains in preserving the good health of its citizens and minimising deaths (Ning et al., 2020). Strict lockdowns are enforced whenever clusters occur in certain regions, which includes the restriction of inter-city movements such as workplace closures and transport bans. The daily cases in China remain negligible compared to other countries such as Britain and USA, both which have adopted the endemic approach of living with the virus instead (Feng, 2021). While China’s approach is effective in minimising daily infections, this may come at a high economic cost, especially when the country relies on the international market to boost its economy, which is hindered by travel restrictions.

While both above-mentioned applications of healthcare data analytics have their respective merits, contact tracing is a more successful contribution in comparison to the control of the COVID-19 restrictive measures. With reference to the Socio-Ecological Model, the main focus of contract tracing is at the individual level. Individuals would be more conscious to only leave their houses whenever necessary, or at the very least monitor their whereabouts to minimise the risk of infection during the pandemic. On the other hand, the control of restrictive measures focuses at the policy level, since the decision making by governments on such measures affects its citizens’ livelihoods, which may not be agreeable by all members of the local community especially when the country’s economy would be affected in the long run. As such, contact tracing would be deemed more successful in its contribution against COVID-19, especially when the individual belief of exercising social responsibility has the potential to relieve the burden borne by governments to tackle the virus. After all, the prevention of more cases is indeed better than cure.

Word count: **699 (excluding in-text citations)**

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