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Viewpoint

The digital divide impacts on mental health during the COVID-19 pandemic

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ABSTRACT

One of the most daunting unintended consequences of the digital revolution is the digital divide (DD), a pervasive social and information inequality. It negatively affects all sectors of society, and exerts compounding influences on other social inequities. To further complicate the situation, the COVID-19 pandemic has been intensifying the scale of DD and deepening the scope of DD barriers with the increasing but imbalanced applications of digital technologies. For instance, while digital technologies can provide support to fulfill people's mental health needs, recurring evidence shows that DD-prone people are more likely to be excluded from critical services, activities, and resources to support their health concerns and challenges. So far, studies about the mental health consequences of DD amid COVID-19 are limited. Available evidence suggests that the general mental health impacts of COVID-19 include anxiety, depression, and suicidal behaviors, while the mental health consequences of DD due to COVID-19 are mainly stress, distress, and anxiety. To shed light on the research gap, based on the social inequality roots of DD and the nexus between DD barriers and factors of social inequalities, this study highlights the alarming overlap between DD-prone communities and vulnerable populations. Furthermore, we underscore the future research directions that could help society better serve both underserved communities.

The Digital divide (DD), essentially, is a form of digital inequality. It refers to “the gap between those who have access to computers and the internet and those who don't” (The United Nations, 2021). There are various types of DD barriers or gaps concerning different ways of division (Calderón Gómez, 2018). Van Dijk & Hacker (2003), for instance, classify DD barriers into mental (e.g., interests, attractiveness), material (e.g., possession of hardware), skill (e.g., user-friendliness, education, and social support), and usage (e.g., usage opportunities). In a subsequent study, Lythreitis and colleagues (2021) further categorize the negative impacts of DD into nine types, which include sociodemographic, socioeconomic, personal elements (e.g., motivation, risk perceptions), social support, type of technology (e.g., overreliance on smartphones, lack of equipment), digital training (e.g., assistive technologies, ICT training), rights (e.g., civil liberties, net neutrality), infrastructure (e.g., electricity access), and large-scale consequences. As evidence accumulates, it becomes clearer that the most significant contributors of DD are gender, age, education, quality of support, and privacy concerns. What is important about this finding is that this classification reveals the alarming overlaps between DD and other social

inequalities. In other words, DD and other social inequalities are intertwined. Take the COVID-19 pandemic, which could be understood as an example of the 'large-scale event', for instance. A review of current evidence shows a syndemic effect of the pandemic—it both interacts and intensifies DD and other social inequalities.

As the digital revolution advances, DD amplifies current social inequalities such as the ever-widening rural–urban divide, making marginalized and disadvantaged people even more vulnerable. On the other hand, social inequalities also reinforce DD since they share an overlapping set of antecedents, determinants, contextual factors, and result in similar alarming consequences—worsened discrimination and social exclusions among the DD-prone populations. Recent evidence indicates that DD has even intensified deep-rooted power infrastructure such as social stratification (Zheng & Walsham, 2021). A review of studies published amid COVID-19 reveals that DD barriers include the same set of challenges faced by vulnerable populations like rural residents and older people—study and knowledge barriers, communication barriers, gender barriers, technological discrimination, etc. In other words, the syndemics of COVID-19 pandemic, DD, and conventional

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social inequalities are, essentially, shouldered by the same groups of people. This fact concerns the social inequality roots of DD and the nexus between DD barriers and other social inequalities.

While this finding is disturbing, accumulating evidence may paint a direr picture. Research shows that the COVID-19 pandemic causes a wide array of mental health issues brought by different psychological responses, ranging from anxiety, depression, negative feelings, to suicidal behaviors. A United Kingdom-based survey of the digital index reveals that 78% of people suggested that the pandemic has increased the necessity of digital skills (Spanakis et al., 2021). The survey also shows that 37% of the participants used digital technologies considerably more frequently to address their mental health concerns and challenges during the pandemic (ibid). These combined insights suggest that while digital technologies have various benefits and potentials, DD-prone people are more likely to be excluded from these advantages, which could shape their physical and mental health in both tangible and intangible ways.

Take mental health for instance. Mental health could be understood as “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community” (World Health Organization, 2022). Under the impact of the COVID-19 pandemic, digital exclusion and social exclusion driven by DD have worsened people’s mental health. In a narrative review, Singh et al. (2020) identify various vulnerability factors of the mental impacts of COVID-19 on children and adolescents, including age, education level, economic status, pre-existing mental health condition, being quarantined due to infection, or fear of being infected. In addition, Spanakis et al. (2021) argue that people with severe mental illness (SMI) (i.e., schizophrenia, psychotic disorders, bipolar disorder, and depression with psychotic features) are now experiencing higher risks of loneliness and worsening health inequalities. Such impacts are because this population group already faced higher risks of loneliness than others before the pandemic. Due to the limited access to health and social care services, the COVID-19 has introduced debilitating barriers, affecting the vulnerable groups the most.

Nonetheless, studies related to the mental health impacts of DD due to the COVID-19 pandemic are scarce. Mathrani et al. (2021) reveal that DD amplifies the gender divide, based on insights gained from a survey on online learning that expands five developing countries. Their findings show that online learning leads to extra household responsibilities during the pandemic, causing increased stress for female students. They argue about gender-related inequitable situations, leading to more social marginalization due to the mutual impacts of gender discrimination and digital access barriers. Another study examines the mental impacts of DD caused by online learning during the pandemic among students in Bangladesh (Saha et al., 2021). Their survey suggests that 40% of students are suffering from moderate psychological distress, according to the Kessler K-10 distress scale (ibid). The limited studies verify that DD has increased the risks of mental health issues during the pandemic, affecting the vulnerable groups the most. These groups include elder females in developing countries, DD-prone people with SMI, economically-underprivileged children, etc. The mental health impacts of DD are mainly due to social isolation and lack of information with increased stress, distress, anxiety, fear, and so on.

Singh et al. (2020) verify that children are more vulnerable to trauma and increased anxiety. Hence, they suggest developing an elaborative action plan to support vulnerable children and adolescents’ psychosocial and mental health requirements. They urge to improve such groups’ access to mental health services geared towards providing measures for developing healthy coping mechanisms in this pandemic. As for people with SMI, Spanakis et al. (2021) emphasize the need to understand the extent of DD, key contributors, and factors. They also refer to DD barriers and facilitators to support mental and physical health needs.

Finally, we highlight that future research should study the

overlapped factors between DD-prone people and social marginalization and/or social exclusion. Such studies can explore the mechanisms of DD and other social inequality factors that related to marginalization and exclusion. Other potential research areas include the mental health impacts of DD on different population groups. Such studies could delve into the evaluation of various DD barriers, survey different contexts, cultures, and conditions, and evaluate different levels of DD. To reduce the mental health impacts of DD caused by the COVID-19, it is also important to examine existing policies related to DD (and the pandemic) and explore possible strategies for bridging the DD and minimizing its associated barriers for vulnerable groups.

1. Ethics approval and consent to participate

Not applicable.

2. Consent for publication

Not applicable.

3. Availability of data and materials

Data are available upon reasonable request.

4. Authors’ contributions

AS conceived the work and reviewed the literature. TZ drafted, and edited the manuscript. ZS reviewed the literature and edited the manuscript. All authors approved the manuscript for submission.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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