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# Navigating Education in the Context of COVID-19 Lockdowns and School Closures: Challenges and Resilience Among Adolescent Girls and Young Women in South Africa

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Gender related vulnerabilities and inequalities place female learners at high risk of school disengagement due to COVID-19 disruptions. Understanding the impacts of school closures and educational disruptions on female learners in South Africa is critical to inform appropriate, gender-sensitive policies, and programs, to mitigate further exacerbation of educational inequalities. We examined the effects that COVID-19 and lockdowns have had on the educational experiences of adolescent girls and young women (AGYW) aged 15–24, in six districts of South Africa characterized by high rates of HIV, teenage pregnancy and socio-economic hardship. Following a concurrent triangulation mixed-methods approach, we conducted a cross-sectional survey with 515 AGYW, and qualitative interviews with 50 AGYW. More than half of survey participants enrolled in education had been unable to continue with their studies. Factors associated with educational disruption included low socio-economic status, lack of cell phone access and household food insecurity. Qualitative narratives included challenges with online learning and studying at home in resource restricted settings, and insufficient support from schools and teachers. However, despite multiple barriers to continuing education, some AGYW demonstrated educational resilience, enabled by psychosocial and structural support, and resource access. Our findings lend support to an emerging evidence base showing that the closure of schools and tertiary institutions, combined with challenging home environments, and a lack of access to appropriate technology, has disproportionately impacted the most vulnerable AGYW, exacerbating pre-existing educational inequalities within the South African education system. Addressing structural barriers to educational equity, particularly in the pandemic context, including access of technology and the internet, is urgent.

**Keywords:** adolescent girls and young women (AGYW), education, COVID-19, South Africa, school closures, educational resilience, digital divide

## INTRODUCTION

Adolescence is a challenging phase in life for many reasons, but the COVID-19 pandemic, related lockdowns and school closures, have exacerbated challenges and stress, particularly related to educational attainment (Favara et al., 2021). As with the other negative social and health related impacts that COVID-19 and related restrictions have had, the poorest, most marginalized and vulnerable sectors of society are likely to have been disproportionately affected by the educational impacts of COVID-19 related school closures and educational disruptions.

Prior to COVID-19 school closures, South Africa had achieved near universal school enrollment, and secondary school attendance was at 90%, with notable gender parity (StatsSA, 2019; Shepherd and Mohohlwane, 2021). However, even before the pandemic, school completion rates remained poor; with approximately half of a given cohort entering grade 1 projected to not complete grade 12 and attain their National Senior Certificate/"Matric" (similar to a high school diploma), the majority of whom are from poor areas and vulnerable to numerous barriers to education (Weybright et al., 2017; Hall, 2018; StatsSA, 2019; Runhare et al., 2021). Despite completion of grade nine being compulsory in South Africa, in 2018 only 70% of adolescents aged 16–17 years attained their grade nine certificate, and 90.2% of 19–21 year olds, meaning around 60% of young South Africans effectively drop out of school, with no school-leaving qualification; there is considerable variation across provinces, household income quantiles and population groups (Hartnack, 2017; Hall, 2018; StatsSA, 2019).

School "dropout," defined as leaving education without obtaining minimal academic certification, should be understood not as a single event, but rather as a cumulative process of disengagement, with multiple causal factors at the individual, social and institutional level (Hartnack, 2017; Runhare et al., 2021). In South Africa, evidence shows a correlation between falling behind at school, being absent from school, and dropping out of school, which is in turn associated with socio-economic status and school quality (Spaull, 2015; Spaull et al., 2021). Attending and completing school are strong predictors of health and higher socio-economic status later in life (Weybright et al., 2017; Wils et al., 2019). School dropout is correlated with being female, low family socio-economic status, population group/ethnicity, poor school facilities, and infrastructure, low quality schooling, household responsibilities, and household head's level of education (Hall, 2018; StatsSA, 2019; Wils et al., 2019).

In line with policies adopted globally, the closure of schools and other educational institutions implemented on 18th of March 2020 was a key component of the South African government's strategy for limiting transmission of COVID-19 (Nwosu, 2021). For a period of 10 weeks, ending on 8th of June 2020, no learners were permitted to go to school (Hoadley, 2020). After that, there was an easing of restrictions, with educational institutions partially reopening in a phased approach (Spaull and Van der Berg, 2020). However, in July 2020, amidst rising infections, tighter restrictions were again imposed and schools closed once more. In late 2020 there were

several phases of easing and tightening of restrictions following infection patterns (Hoadley, 2020). Overall, in 2020, with the on-and-off school closures in South Africa, it is estimated that a full third of the school year was lost, meaning that the country's 13 million learners, including approximately 1.2 million matriculants (final year students), fell behind on curriculum coverage and risk severe skills deficiency well beyond 2030 (Hoadley, 2020; DBE, 2021; Timm, 2021). Losses in teaching time also differed between schools, due to factors including school closures due to infection, teacher shortages, and poor attendance (Hoadley, 2020). The reopening of schools for the 2021 academic year was delayed until mid-February 2021, from which point learners attended on a part-time, rotational basis (Shepherd and Mohohlwane, 2021).

Globally, the sudden closure of schools and education institutions as a response to COVID-19 has resulted in rapid and dramatic shifts to replace in-person teaching with various forms of technology based, remote and distance education (UNESCO, 2021a). The adoption of remote learning was carried out with urgency, and institutions had little time to make adequate preparations (Oluka et al., 2021). Due to the rotational timetabling models established after schools reopened, compensatory learning at home was essential to ensure coverage of the curriculum (Hoadley, 2020). In recognition that internet access was not universal, and in an effort to continue the provision of education during school closures, the South African Department of Basic Education (DBE) made attempts to fill the gap for those learners unable to access online learning (Nel and Marais, 2020). Governmental departments of communications and digital technologies and DBE, collaborated with national television and radio broadcasters to launch the multi-media COVID-19 Learner Support program, with the aim of rolling-out accessible virtual learning for students across South Africa (Mhlanga and Moloi, 2020; Ngogi Emmanuel, 2020). DBE collaborated with several non-governmental entities on initiatives that made use of online, mobile and social media platforms, and proactive changes in national legislation required mobile providers to support "zero-rated"<sup>1</sup> educational applications and websites (Czerniewicz et al., 2020; Mhlanga and Moloi, 2020; Landa et al., 2021). Teachers were tasked with creating lesson plans and assignments which were made available online through these platforms (Mhlanga and Moloi, 2020).

COVID-19 has accelerated the adoption of remote learning in South Africa, but access to the internet nationwide is not universal, with socio-economically disadvantaged communities facing various barriers to accessing fast, reliable, and affordable internet solutions (Oluka et al., 2021). Whilst remote learning has ensured some level of continuity and reduced disruption to education, it is likely that the shift to online and internet-based learning has disproportionately impacted those learners from disadvantaged socioeconomic communities, particularly female learners (Oluka et al., 2021; Wernli et al., 2021).

The closure of educational institutions during the COVID-19 pandemic has not only reduced educational progress and

<sup>1</sup>A "zero-rated" application or website is when a mobile operator does not charge data for usage.

learning globally, but has also interrupted the functioning of education systems and disrupted other social functions that educational institutions fulfill (UNESCO, 2021a). There is a need to understand what is at stake when schools close, beyond learning, as school closures can lead to negative effects that go beyond the direct loss of education (Rafaeli and Hutchinson, 2020; UNESCO, 2021a). Gender related vulnerabilities and inequalities, including increased experiences of violence and unintended pregnancies, mean that female learners are at higher risk of school disengagement and attrition due to COVID-19 disruptions than their male counterparts (Van der Berg et al., 2020; UNESCO, 2021a). Being out of school significantly reduces AGYW's social network, their interaction and support from peers and educators, access to sexual and reproductive information and services, and safe spaces, which results in increased vulnerability to sexual violence and exploitation, early marriage, and unintended pregnancies (Rafaeli and Hutchinson, 2020). Evidence also suggests a gender gap in digital literacy skills in sub-Saharan Africa; consequentially AGYW are more likely than their male counterparts to have experienced learning losses during the pandemic due to gender disparities in accessing and benefiting from online learning, including social inequalities and technological constraints (Rafaeli and Hutchinson, 2020; Van der Berg et al., 2020; Crompton et al., 2021).

Most learners in South Africa have missed a considerable period of schooling since March 2020, with evidence emerging of high rates of attrition and drop out (Shung-King et al., 2021). While such restrictions have an epidemiological rationale based on slowing down the spread of the virus, it is critical to understand the costs of such measures, and how they affected the daily lived reality of South African AGYW in order to inform the development of appropriate, gender-sensitive policies and programs to ensure continuity and equality in education, and reduce the negative impacts of school closures on the most vulnerable and marginalized AGYW (Cloete et al., 2021; Gittings et al., 2021).

Our aim was to examine the impacts of COVID-19 related school closures and educational disruptions on AGYW in six districts of South Africa identified as high priority for health and educational interventions, with communities characterized by high HIV prevalence, high rates of teenage pregnancy, and disproportionately affected by socio-structural drivers of these. We use the concept of resilience within our analysis. Resilience is understood as a process of positive adaptation in response to adversity (Van Geel and Mazzucato, 2020). In this paper we use the concept of "educational resilience" to refer to resilience manifested in the educational domain, specifically the likelihood of succeeding in school despite adverse conditions and experiences (Waxman et al., 2003; Van Geel and Mazzucato, 2020). As a process, educational resilience can be understood as an on-going interaction between an individual and their environment (Lynnebakke and de Wal Pastoor, 2020). To the authors' knowledge, this is the first study to examine educational resilience among AGYW in the context of COVID-19 in South Africa.

## MATERIALS AND METHODS

Following a concurrent/convergent triangulation mixed methods approach (Creswell and Plano-Clark, 2006), we analyzed data from a cross-sectional telephone survey and remotely conducted qualitative interviews, that were nested within a study evaluating an intervention for AGYW in South Africa.<sup>2</sup> Data collection took place between November 2020 and March 2021, in six South African districts, spanning six provinces of South Africa: Klipfontein, Cape Town (Western Cape), King Cetshwayo (KwaZulu Natal), Ehlanzeni (Mpumalanga), Bojanala (North West), Nelson Mandela Bay (Eastern Cape), and Thabo Mofutsanyana/DiHlabeng (Free State).

### Survey Component Methodology

Between December 2020 and February 2021, we conducted a cross-sectional telephone survey<sup>3</sup> with the aim of surveying 1260 AGYW aged 15–24 years who had been beneficiaries of the intervention being evaluated, drawn from an anonymized database. We stratified beneficiaries by district and age group, and for the younger age group, by whether they were in school. Of the sampled beneficiaries, 515 were contactable by telephone and consented to participate; a sample realization of 23.8%. The survey was available in the language of the participant's choice including Zulu, isiXhosa, Afrikaans, Setswana, SeSotho, siSwati, and English.

To assess how the COVID-19 pandemic and the lockdowns had affected participants' educational progress, we asked questions regarding enrollment in any educational institution at the beginning of 2020 (the beginning of the South African academic year) and during October 2020, and whether the participant had dropped out of an educational institution during 2020. We created an indicator of participants' socio-economic status (SES) determined using Cluster Analysis with the K-Modes algorithm, which aims to partition the objects into k groups such that the distance from objects to the assigned cluster modes is minimized (Huang, 1997). SES status was based on 13 variables, several of which are commonly used in other surveys to create similar indices (including household assets), and categorized from 1 to 4, with 1 indicating highest SES and 4 lowest (poorest). Most of the participants in the study came from impoverished communities by global standards, and thus we decided that the SES category to which a participant belonged to would be relative to other participants in the study, rather than everyone else in the world. Analysis of survey data was conducted using Stata (StataMP 14, StataCorp, Texas, United States) and R version 4.0.2. We described key variables with frequencies (n) and proportions (%), overall and stratified by age group in **Table 1**. We calculated relative risks and 95% confidence intervals to assess associations between socio-economic factors and the experience of an educational disruption during the 2020 academic year. Missing observations were excluded from analysis: there was a maximum of 9 missing observations per variable.

<sup>2</sup>More details on the survey methodologies can be found at <https://www.samrc.ac.za/intramural-research-units/healthsystems-herstory>.

**TABLE 1** | Description of survey participants who were enrolled full-time in an educational institution at the beginning of the 2020 academic year ( $N = 398$ ).

Variable	Observed freq	Percentage (%)
<b>Socio-economic status (SES)* (<math>N = 396</math>)<sup>a</sup></b>		
1	118	29.8
2	60	15.2
3	157	39.6
4	60	15.4
<b>AGYW is an orphan (mother and/or father is deceased)</b>		
Total	145/397 <sup>b</sup>	36.5
15–19	77/238	32.4
20–24	68/159	42.8
<b>In October 2020, AGYW was enrolled full-time in school, college, university, or another educational institution</b>		
Total	376/398	94.5
15–19	232/238	97.5
20–24	144/160	90.0
<b>During 2020, AGYW dropped out of school, college, university, or another educational institution</b>		
Total	30/398	7.5
15–19	11/238	4.6
20–24	19/160	11.9
<b>AGYW was unable to continue her studies during COVID-19 and the lockdown</b>		
Total	183/389 <sup>c</sup>	47.0
15–19	103/231	44.6
20–24	80/158	50.6
<b>AGYW has her own cell phone</b>		
Total	353/397 <sup>b</sup>	88.9
15–19	200/237	84.4
20–24	153/160	95.6
<b>AGYW does not have her own cell phone, but uses someone else's cell phone</b>		
Total	39/397 <sup>b</sup>	9.8
15–19	33/237	13.9
20–24	6/160	3.8
<b>AGYW does not have her own cell phone and does not use someone else's cell phone</b>		
Total	5/397 <sup>b</sup>	1.3
15–19	4/237	1.7
20–24	1/160	0.6
<b>AGYW lives in a household with electricity in working order</b>		
Total	388/398	97.5
15–19	230/238	96.6
20–24	158/160	98.8
<b>AGYW lives in a household with a working laptop/computer</b>		
Total	138/398	34.7
15–19	73/238	30.7
20–24	65/160	40.6
<b>AGYW lives in a household with internet in working order</b>		
Total	95/398	23.9
15–19	47/238	19.7
20–24	48/160	30.0
<b>In past month, participant or household member went a day and night without eating because of lack of food</b>		
Total	60/396 <sup>a</sup>	15.2
15–19	38/237	16.0
20–24	22/159	13.8

\*SES category 1 denotes highest SES (richest), and 4 lowest SES (poorest). <sup>a</sup>Two responses were missing for this variable. <sup>b</sup>One response was missing for this variable. <sup>c</sup>Nine responses were missing for this variable.

## Qualitative Component Methodology

The qualitative study sample consisted of fifty (50) AGYW aged 15–24, with twenty (20) in the 15–19 years age group, and thirty (30) in the 20–24 age group. In-depth interviews (IDIs) were conducted telephonically between November 2020 and March 2021, using semi-structured interview guides which outlined key topics for discussion. Audio recordings were directly translated from their original language into English and reviewed by interviewer/s for accuracy. Qualitative data were coded using iterative thematic analysis, following an integrated process using pre-determined deductive code types reflexively refined to reflect emerging themes. Analysts collaboratively engaged in reflective and cyclical data interpretation, using analytic memos to create an extra level of narrative, and provide an interface between participants' data, researchers' interpretations, and wider theory.

## Ethical Considerations

Ethical approval was granted by the South African Medical Research Council Research Ethics Committee (EC036-9/2020). A study team member contacted each of the AGYW telephonically to invite her to participate in the study and administered the consent process. If the AGYW was under 18 years of age, parental/caregiver consent was obtained prior to conducting the consent process with the AGYW. We invited consenting AGYW to participate in the survey or an interview in their language of choice. Consenting information was presented to participants in a way that was easy to understand and appropriate to the participants' education level. Each participant received ZAR 100.00 (US\$ 7.00) reimbursement for their time taken to participate in the study.

## FINDINGS

### Survey Findings

Among 515 survey participants, 398 (78.1%) were enrolled full-time in school, college, university or another educational institution at the beginning of the 2020 academic year, before the emergence of the COVID-19 pandemic and the first lockdown; participants in the younger age group were significantly more likely to report being enrolled in education, 91.1% of AGYW aged 15–19 years compared to 59.9% of AGYW aged 20–24 years. Just under half of all participants (46.0%) reported they were in primary or high school at the time of the survey. Having completed Grade 12 schooling was reported by 38.0% of the participants (69.4% amongst 20–24 year olds, and 16.0% of 15–19 years olds).

Of the AGYW aged 15–24 who were enrolled full-time in school, college, university or in another educational institution at the beginning of the 2020 academic year, 15.4% were classified as in the lowest (poorest) SES group and 28.9% in the highest group, 36.5% had lost one or both parents, almost all lived in households with electricity (97.5%), and most had their own cell phone (88.9%) (Table 1). Only 34.7% AGYW had a laptop in their household, and only 23.9% had internet access at their home. Household food insecurity was reported by 15.2%. Between the beginning of 2020 and October 2020, 47.0% of AGYW enrolled in

education were unable to continue studies during the lockdown and 7.5% dropped out of their educational institution (Table 1).

Nine of the participants who were enrolled full-time in education at the beginning of 2020 had missing data on educational disruption. Participants in the SES Status Group 4 (poorest) had a 39% higher risk of reporting an educational disruption compared with participants in the SES Status Group 1 (Table 2). Participants who had a deceased mother and/or father had 1.27 times the risk of reporting an educational disruption compared with those who had not lost a parent. Participants who had no cell phone access had 1.70 times the risk of reporting an educational disruption compared with those who had their own cell phone. Participants who lived in a household where someone had had gone a day and night without eating because of lack of food in the past month, had 1.37 times the risk of reporting an educational disruption compared with those who did not report going a day and night without eating in their household. Educational disruption was not significantly associated with cell phone use, household electricity, laptop and internet (Table 2). We did not include age disaggregated data in Table 2. The effect sizes were very similar except for the SES category where, in the younger group, being in the lowest SES category was significantly associated with educational disruption (relative risk: 1.58, confidence interval: 1.04–2.41) but this was not the case in the older age group (relative risk: 1.26, confidence interval: 0.80–1.98).

## Qualitative Findings

Key themes that emerged in the qualitative data included issues related to accessing technology and navigating the shift to remote learning, educational uncertainty, disruption and dropout, and educational resilience.

### Access to Technology for Online Learning

Qualitative narratives echo survey findings regarding the low levels of access to laptops, computers, and internet, with relatively high access to cell-phones. This is reflective of the restricted resource settings and circumstances in the households and communities where our respondents were based, with limited internet access. The lack of access to data for online learning was highlighted by AGYW as a key issue: “Lockdown had a negative effect because we were forced to do online learning, and it was not easy especially for those people who are struggling. Because we needed data. . . you have to find a way to get data” (AGYW 20–24 years).

Videos/video-calls require fast internet, and large amounts of data. As a result, those AGYW with limited data and internet access were unable to benefit from online teaching delivered through these formats. For AGYW from financially constrained households, buying enough data to use for videocalls was prohibitively expensive: “During lockdown we were expected to study from home, we were expected to have a lot of data bundles so that we can have videocalls with the teachers” (AGYW 15–19 years). Expensive data bundles would be used up rapidly, barely long enough to attend an entire class: “Even when you buy your own data bundle, let’s say you buy 100 MBs, that will only last for 30 min” (AGYW 20–24 years).

### Digital Infrastructure

Even when AGYW were able to buy data and ensure a successful connection to the internet, network coverage is often poor, with disruptions and delays, making online learning challenging: “Sometimes the data bundles could not be loaded to attend online classes. . . even when you attend, the network connection is slow or just down all together” (AGYW 20–24 years). Various technology challenges with online learning were described by AGYW, due to poor internet infrastructure and reliability, and limited digital literacy: “(Sometimes there is) a network problem, so you have to re-send and sometimes find that you no longer have that work, maybe it was deleted, so you have to start afresh. . . Online learning is so challenging” (AGYW 20–24 years). Some of the AGYW who attended educational institutions in urban areas had to leave campus during the lockdown and return home to rural or under-served areas, where studying online was hampered by poor network coverage and internet infrastructure: “I’m doing first year of University. . . COVID-19 affected me bad. . . bad. . . bad. . . Firstly, when COVID-19 arrived. . . we all had to go home. . . So fine, we go home, but home is not like here in (in the city). . . where I live. . . network is a problem. . . so online learning is kind of hard. . . and on top of that the data was a problem, up until the university decided to supply us with data. But even if you had data the whole network thing is a problem” (AGYW 15–19 years). “and on top of that the data was a problem, up until the university decided to supply us with data, but even if you had data the whole network thing is a problem” (AGYW 15–19 years). Not being able to participate in online classes or assessments due to lack of internet connectivity fostered anxiety amongst AGYW: “Sometimes because of the network, you won’t be able to attend that class or end up not writing that test. . . In my case, I did not write the exam in June due to the network problem. . . I was deeply hurt because I did not know what was going to happen” (AGYW 20–24 years).

### Empty Promises

Some educational institutions themselves were resource-restricted, which meant that not all schools offered online teaching. Failure to provide remote learning opportunities by some schools meant that AGYW were left sitting at home with nothing to do: “During lockdown we did not go to school, we stayed at home and then they did not teach us online, so we had nothing much to do” (AGYW 20–24 years). AGYW felt that their schools had failed to keep promises of continued support: “During lockdown we were not going to school. . . they were claiming that they sent us some work. . . and lots of things. . . which they did not send” (AGYW 15–19 years). For many AGYW, the online learning experience did not transpire as promised by their educational institutions, as in many cases there was a failure to deliver promised resources and learning aids: “It is not done how they said the online learning would be. We were told that lecturers will send out videos and explain or send voice notes. . . but they are not doing that. They just give you work and expect you to write an assignment” (AGYW 20–24 years). Some schools promised to provide students with data, however, in

**TABLE 2 |** Educational disruptions in the 2020 academic year among survey participants (15–24 years of age) (*N* = 389)<sup>#</sup> who were enrolled full-time in school, college, university, or in another educational institution at the beginning of the academic year.

**During 2020, did participant report that she could not continue with her studies due to COVID-19 and the lockdown, and/or did she drop out of any school, college, university, or other educational institution?**

	Yes (Freq)	Yes (%)	Sample	P-value	Relative risk
<b>Socio-economic status (SES)*</b>				0.161	
1	50	43.1	116		Ref
2	25	43.1	58		1.0 (0.70–1.44)
3	72	46.5	155		1.08 (0.82–1.41)
4	36	60.0	60		1.39 (1.04–1.87)
Total	183	47.0	389		
<b>AGYW is an orphan (mother and/or father is deceased)<sup>+</sup></b>				0.026	
No	106	42.9	247		Ref
Yes	77	54.6	141		1.27 (1.03–1.57)
Total	183	47.2	388		
<b>Cell phone access</b>				0.302	
Has own cell phone	163	47.0	347		Ref
Uses someone else’s phone	16	43.2	37		0.92 (0.63–1.35)
No cell phone access	4	80.0	5		1.70 (1.08–2.68)
Total	183	47.0	389		
<b>Cell phone use</b>				0.137	
Uses a cell phone	179	46.6	384		Ref
Does not use any cell phone	4	80.0	5		1.72 (1.09–2.69)
Total	183	47.0	389		
<b>Household has electricity</b>				0.874	
No	4	44.4	9		Ref
Yes	179	47.1	380		1.06 (0.51–2.22)
Total	183	47.0	389		
<b>Household has laptop or computer</b>				0.592	
No	122	48.0	254		Ref
Yes	61	45.2	135		0.94 (0.75–1.18)
Total	183	47.0	389		
<b>Household has internet</b>				0.207	
No	145	48.8	297		Ref
Yes	38	41.3	92		0.85 (0.64–1.11)
Total	183	47.0	389		
<b>In past month, did you or any member of your household go a day and night without eating because of lack of food?</b>				0.020	
No	147	44.5	330		Ref
Yes	36	61.0	59		1.37 (1.08–1.73)
Total	183	47.0	389		

<sup>#</sup>Nine participants had missing data on educational disruption; \*SES category 1 denotes highest SES (richest), and 4 lowest SES (poorest); <sup>+</sup> One participant had missing data on the orphanhood variable.

many cases this never happened, leaving learners disappointed, and frustrated: “The school promised us that they will send data. We waited the whole time until school reopened without receiving it. . . it was sad because we waited for them to assist us. . . when you’re studying alone there are certain things you do not understand. . . they said we will send data so that we can help you, we are waiting. . . even now we are still waiting” (AGYW 15–19 years).

In addition to failures to provide sufficient resources and materials for learning, AGYW felt that explanations and support provided by educators were insufficient, which hampered their

ability to understand content, and fostered feelings of isolation and confusion: “Online learning is difficult because most of the time, you study alone. . . the lecturer will send notes and tell you next week we will be writing a test. So you have to cram those notes, but sometimes they are not understandable. . . the lecturers are not explaining” (AGYW 20–24 years).

**Uncertainty and Disruption**

Respondents described the way in which constant policy changes, schools opening and closing due to infections amongst staff, or phases of lockdown restrictions, provided on-going disruptions

to education, creating uncertainty and anxiety: “Sometimes I would not go to school... they say we are closed because of COVID-19... there was a time when the school was closed because they said the Principal had COVID-19... the school closed for 2 weeks... Then the school would open, and shortly after opening, they would say it is lockdown, and we had to stay at home again” (AGYW 15–19 years). In addition to the on-and-off school attendance, additional regulations of mask-wearing and sanitizing added stress to the school experience: “On the education side, it has affected me because we were on and off at school, we were disturbed by this. Life was no longer good... we had to wear a mask, to sanitize... all these rules. Sometimes you forget [laughing] all the new things (restrictions) that came... we had to adapt” (AGYW 15–19 years).

Even after restrictions were eased, there was no return to normalcy. Returning to school after the phased reopening was described as a very strange experience, creating feelings of unfamiliarity and discomfort: “When schools reopened we went back, but the environment and atmosphere at school was awkward because we were very few at school... it was like I was in a new environment, an environment that I did not know” (AGYW 15–19 years). After returning to the classroom on a rotational basis, respondents lamented the insufficient contact time with teachers. AGYW described the feeling of always struggling to catch up with the curriculum and grasp all the content, leaving them feeling ill-prepared for exams: “Things are not like before... now we are under pressure because we go to school on those specific days... even at home we have to study as well, so that when the teacher or lecturer arrives at least we are on par. Then there are other things that you cannot figure out when you are at home... you have to try by all means to get the teacher or lecturer to explain... if you were able to attend school on a daily basis you could ask the teacher whatever you wanted... when we return to school we have to write exams... (but) you are not able to get the information you wanted clarity on from the teacher” (AGYW 15–19 years).

Some respondents described feeling that so much time has been wasted, with all the school closures. These feelings of wasted time and hampered progress are exacerbated by the need to repeat content that has already been covered: “Lockdown has affected my studies in a sense that we spent a lot of time indoors and we were not studying because everything was upside down; nothing was happening because of lockdown. So it affected me a lot because I was behind at school and we had no choice but to repeat what we already did, because we did not complete it... because of lockdown I had to repeat what I had already done... the whole year practically went to waste” (AGYW 15–19 years).

### Navigating the Shift to Remote Learning

Respondents described the multitude of challenges they faced with the shift to remote learning. Amongst these challenges, AGYW shared their experiences relating to the loss of face-to-face contact with teachers in the classroom setting: “With my final exams, it was difficult not going on campus every day because I am a person that learns when I see someone in front of me, teaching me something new every day. So, the virtual learning was not that easy for me. I am the kind of person that needs

someone in front of me in order to understand what is going on” (AGYW 20–24 years).

Attaining support from teachers was challenging with remote classes. Some learners would attempt communication with their teachers through text messages, in order to ask questions or seek clarification, but this was not always successful: “It was super impossible... we like to be taught by someone who is in front of you, over the internet a person is teaching you, but you don’t understand, so you have to send a text... when the teacher is here it’s way better” (AGYW 20–24 years). The inability to ask teachers for clarity or further explanation impeded AGYW’s comprehension of content, negatively impacting on academic performance: “We were doing our school work online... that has caused our performance to drop. Because when you don’t understand, you are unable to ask for help in an online class” (AGYW 20–24 years).

Respondents also described challenges working from home, where it was difficult to concentrate and focus due to multiple distractions such as the television, other people and household responsibilities. Concentrating on school work required a high level of self-discipline: “Studying at home during lockdown affected me a lot because you don’t concentrate at home. A lot of things disturb you... It was difficult for me to study... at home there are TVs, cell-phones, you call friends and you fail to concentrate... friends come to your place, and your parents ask you to do chores for them” (AGYW 15–19 years). In addition, those AGYW who have children and have to juggle parenting responsibilities with schoolwork, faced extra disturbances: “There are difficulties at home because at times my baby doesn’t want them (other family members) and wants only me... she disturbs me when studying... she disturbs me a lot” (AGYW 20–24 years). Being online for learning also made it difficult not to get distracted by other online entertainment such as social media channels: “We were forced to stay at home... When we are at home, you shift your focus to other things... like social media, and get distracted” (AGYW 15–19 years).

### Drop-Out

Adding to the survey findings on educational disruptions, qualitative findings suggest that many AGYW were unable to complete education due to financial pressure and unemployment in the household. Qualitative narratives illustrated the decisions to drop out of school which many AGYW were forced to make: “COVID-19 has affected us a lot because even now schools are still closed. Us Matriculants (final year students) are the most affected... You have to study at home until the schools re-opens. It has a very huge impact. Lots of us will fail, others will end up being drop-outs because of delays in re-opening of schools” (AGYW 20–24 years). With all the disruptions and uncertainty, some AGYW lost interest in returning to school: “When it is time to go back to school and studying... to carry on with our studies and be serious, some girls are losing interest and not putting effort of going back” (AGYW 15–19 years).

Future prospects of AGYW, and hopes for attaining further education were dashed, negatively impacting on AGYW in several ways. Applications to tertiary education were hampered for many reasons, for example post offices were closed so AGYW

were unable to send applications: “Post Offices were closed. . . I was in the process of applying to the universities, and I was unable to send them. . . All these things mess up your plans and your life” (AGYW 15–19 years). Lack of data and internet access during COVID-19 negatively impacted university applications: “We want to apply for universities, but we do not have enough airtime or data in our phones for the application” (AGYW 15–19 years). Narratives of missed opportunities for further education linked to lack of access to internet infrastructure were shared: “I applied but the university that accepted me ended up withdrawing their offer because I did not have data bundles and network connection in order to see their offer” (AGYW 15–19 years). In addition to a lack of internet and technology, other resource restrictions, for example lack of money for transport, hampered access to education: “After lockdown, they said we can go back to school, and schools opened. I was going to school, but sometimes I couldn’t because I didn’t have transport money” (AGYW 15–19 years).

### Adolescent Girls and Young Women Educational Resilience

Despite the multitude of challenges AGYW faced, some demonstrated resilience and determination to pursue their educational goals: “It is not easy. . . But no matter how hard, we did our best” (AGYW 20–24 years). Some AGYW described their self-motivation to find solutions and continue studying, using resources available online; notably, this necessitated access to the internet: “Because the library was also closed, what I did was to try and get data so that I can search online. I looked for past question papers. . . because I did not have textbooks, I would download them. What helped me was the internet because the libraries were also closing because of COVID-19. . . I was studying on my own at home through the internet. . . when the school closed, I continued studying my notes at home and did the past question papers to see where I should improve. Then when school reopened, I could go and listen to the teacher, but what I had been doing on my own also helped me” (AGYW 15–19 years).

Those AGYW that managed to continue with schoolwork during the school closures felt that they had managed to keep up, which made returning to school easier: “I do not want to be left behind in my school work, so I decided to work hard because I heard that high school is difficult and things become complicated. . . I decided to start with the online learning so that I could be ahead even though the curriculum would change. . . (When we went back to school) it was easy because most of the things that they were doing in the classroom it was like a revision” (AGYW 15–19 years).

Respondents shared their experiences and decision-making processes around continuing with education. Some AGYW considered dropping out due to challenges but with determination, managed to be resourceful and continue: “Some of us learn more when we’re in groups, discussing and stuff like that. . . during COVID-19 you couldn’t do that. . . gatherings were not allowed. . . Keep your distance, wear a mask. . . some of us don’t have the. . . specific (learning) material that you have to use. . . you used to share material with another person, but because of COVID-19 that person is not there. . . it was bad. . . it

was bad. . . bad. . . bad. . . I thought of quitting at some point, I don’t wanna lie. . . But I continued anyway. . . for other financial reasons I had to cut most of my modules. . . but from there I was able to manage. . . because the subjects that I was doing didn’t require lot of materials. . . you could get notes from the internet or from the school. . . those (web)sites and stuff. . . it’s tough. . . but that’s how I managed” (AGYW 15–19 years).

In the qualitative narratives, there were descriptions of how some AGYW overcame barriers, through resourcefulness and determination, drawing on the support and assistance from other people, such as fellow students: “It was really difficult, but we managed to pass in the first semester. . . Although it is still difficult, we are working hard so that we can pass. . . What helped me is, even though I missed classes because of data bundles and network connection problem, I would ask others about the lesson I missed and when they told me, I will go to my textbooks and study on my own. Hard work and dedication through consulting other students was the strategy I used” (AGYW 20–24 years).

Those respondents who demonstrated resilience explained how they had tried to keep a positive attitude and remain focused and motivated: “When COVID-19 hit, I had to focus, I had to shift all of my focus into my books. So that I know I am putting in 100%, so that I know that I can pass. I am a very positive person, I see the bright side in everything. So I didn’t worry much about it because I knew I was going to be able to make it through. . . some of the time I had a bit of anxiety about it, when I was going through my books, I was fighting with the fact that when I saw a new chapter I would be frozen and I would panic because I would not know what to make of it” (AGYW 20–24 years).

Despite socio-economic contexts of poverty, most AGYW have access to a cell-phone, even if they don’t have one of their own.<sup>3</sup> Because young people are already using technology and social media, it was easy for some to adapt to online learning using social media and communication platforms: “COVID-19 didn’t affect our schooling too much. . . because we used social media (already). We were communicating a lot through WhatsApp. . . doing group chats” (AGYW 20–24 years). Some AGYW narratives included positive experiences with remote learning, seeing it as an opportunity to study in a way that suits individual needs and learning pace: “The online learning. . . during lockdown assisted me a lot. . . it gave us time to study in your own time, at your own pace. We were also given a lot of extensions for assignments. If we had been attending classes we would not have had such a privilege of having extensions. . . Online learning assisted me a lot” (AGYW 20–24 years).

In contrast to narratives above indicating a lack of support from teachers, some respondents shared positive experiences of teacher support: “My teacher was very supportive, he made videos and explained topics, wrote it down on paper and properly explained it. . . Teachers were very helpful” (AGYW 15–19 years). Those AGYW who received support from teachers experienced fewer disruptions to their education and were able to comprehend content satisfactorily: “At school they were doing by what they could for us so that we should like get updates, question papers. . . so we could continue with learning”

<sup>3</sup>See limitation in our sampling due to remote data collection methodology.

(AGYW 20–24 years). Educational resilience demonstrated by some AGYW was also enabled through accessing community resources, online learning platforms, and volunteer-supported learning online: “We had this (online) group chat with these women who are helping school children. . . I was able to push the school-work. . . able to do the online learning, I was able to log-on<sup>4</sup>” (AGYW 15–19 years).

Psychosocial and financial support received by family members were also facilitating factors: “My grandmother is trying by all means to make it possible for me to be in school, and go to university. . . even though it’s tough but with her pension money, she makes sure that I get what I need” (AGYW 20–24 years). Support for studying from other people at home was an enabler for AGYW continuing education and not falling behind with schoolwork during school closures: “At the moment I live with my boyfriend. . . he has helped me a lot, when it came to assignments and my schoolwork. . . I ended up doing very well at school this year” (AGYW 20–24 years).

## DISCUSSION

Our findings reveal that due to contexts of poverty and lack of access to resources in the study communities, limited access to internet and suitable devices, and high costs of data, studying online was not viable for many AGYW, which resulted in a substantial disruption in education. The most vulnerable AGYW were the most likely to experience educational disruption: those in the lowest (poorest) SES category, those who were orphaned, those who had no cell phone access, those who had experienced household food insecurity. Qualitative narratives included descriptions of various barriers to continuing education during school closures, for example home environments not being conducive to studying due to distractions and obligations such as household and childcare responsibilities, and lack of appropriate technology and internet connection to enable online learning. Despite the various challenges and disruptions to education, some AGYW demonstrated educational resilience, maintaining motivation to study, adapting to online learning, and capitalizing on available resources and support.

### Unequal Access to Technology and Internet for Online Learning—The Digital Divide

Access to reliable internet and data for mobile phones was cited by AGYW in our study as a key barrier to successful remote learning and “virtual schooling.” Our study sample was drawn from communities in parts of South Africa characterized by poor infrastructure, often with unreliable electricity supply, and limited access to information and communications technology (Landa et al., 2021). Additionally, the study communities were socio-economically disadvantaged, meaning that many households have limited access to technology devices, and the internet. Among AGYW in our survey sample, access to a

cell-phone was relatively high,<sup>5</sup> however, this still left 16% of AGYW aged 15–19 in the survey sample who did not have their own cell-phone. Less than a third of AGYW in the survey lived in households with a computer/laptop, and less than a fifth had internet access at home.

Our findings echo those from a study conducted at a South African university, which revealed high levels of inequity in online learning accessibility; with some students accessing learning on sophisticated devices such as laptops and desktop computers, with unlimited internet, and other students using simple smartphones, with poor network connectivity (Motala and Menon, 2020). A small proportion of South African learners have adequate technology-enabled learning at home; estimates suggest that at most, 5–10% of learners can continue learning at home given their access to computers and the internet, with figures varying depending on the school (Spaull and Van der Berg, 2020). National Household Survey data shows that only 22% of South African households have a computer, 10% of households have an internet connection, and amongst learners at no-fee schools (the poorest 75%), less than half of children in a given class have a computer with internet access (StatsSA, 2019; Gustafsson and Nuga, 2020; Spaull and Van der Berg, 2020). These figures bring to light the reality that online learning is not a feasible solution for most South African students (StatsSA, 2019; Pillay, 2021). Additionally, the South African government’s efforts to roll-out accessible virtual learning for students across the country through television and radio programs were not only poorly coordinated and publicized, and not always relevant to the curriculum, but are likely to have been inaccessible to the poorest households who own neither a television nor radio<sup>6</sup> (Gustafsson and Nuga, 2020; Hoadley, 2020).

Whilst access to a smartphone is relatively high in South Africa, as illustrated by our data, phones are often shared amongst several members of the household, and data is expensive, which hampers learners’ access to e-learning, library resources and online research, especially when content needs to be downloaded (Majanja, 2020; Spaull and Van der Berg, 2020). Learners from socio-economically disadvantaged households are often unable to afford e-learning technologies, both in terms of devices and data, necessary for remote learning (Chauke and Chinyakata, 2020). Additionally, learners using smartphones for online learning are at a disadvantage to those using computers, due to limited functionality, smaller screen size and keyboards and the lack of optimization of online learning platforms for handheld mobile devices (Donner et al., 2011; Adnan and Anwar, 2020; Majanja, 2020). It is not only a lack of resources, technology, and internet infrastructure that disadvantages young people from socio-economically deprived communities, but also a lack of the basic digital and technological skills required to learn effectively from remote teaching resources (Adnan and Anwar, 2020; Oluka et al., 2021). Computer literacy is low in South Africa, which has been exacerbated by the slow progress

<sup>5</sup>Note the limitation with study design.

<sup>6</sup>According to the 2018 General Household Survey, 88% of learners were in a household with a television, 55% with a radio, and 7% with neither of these two technologies (Gustafsson and Nuga, 2020).

<sup>4</sup>Participant mentions Mindset Learn, In-school and the Khan academy.

to date in making computers available in schools. Only half of learners in the country are able to access computers or tablet devices in schools, with distribution skewed toward economically advantaged schools (DBE, 2021).

Our data showed that resource disparity was not only an issue at the household and individual learner level, but also at the institutional level. AGYW described how their schools also had restricted resources, and not all schools were able to offer remote learning to learners. Disparity between government schools and private schools in South Africa was glaring even before COVID-19, the majority of schools in South Africa insufficiently prepared and resourced for online teaching (Nel and Marais, 2020). Disparities have increased yet further. Well-resourced schools have been able to adapt to teaching and learning through online platforms relatively effectively and efficiently; students at these schools are likely to be from more affluent families and have access to technology such as smartphones, tablets and personal computers connected to the internet (Pillay, 2021). Data shows that amongst South African learners in no-fee schools (accommodating upwards of 66% of the country's learners), one in five has access to a computer, compared to learners in fee-paying schools, of whom around half have a computer (Reddy et al., 2020; Timm, 2021). Consequentially, learners from under-resourced schools are typically less able to benefit from online learning (World Bank, 2020).

Respondents in our study spoke about support promised by institutions, for example the provision of data bundles, which never materialized. Whilst tertiary institutions in South Africa were mandated to provide students with electronic devices (laptops, tablets) and the internet, to enable a smooth transition to remote learning, this did not always occur as institutions had to draw from their own finances to procure devices for students; as such there were resource inequalities both in terms of institutions' budget affordances and the actual devices provided (Czerniewicz et al., 2020; Oluka et al., 2021). Research from other low-middle income countries shows that where there is a lack of resources in academic institutions, insufficient access and availability of the internet and a lack of technology, limitations are placed on organizational responsiveness and students' capacity to participate in digital learning (Adnan and Anwar, 2020). Resource disparity at South African educational institutions has historical roots in the apartheid system, and the inequalities in educational outcomes between social and material resources at fee-paying and no-fee schools, between wealthy learners and poorer learners, were already stark prior to the advent of COVID-19 (Spaull, 2015; Richter et al., 2018). Those learners attending private schools, or well-resourced public schools, were able to migrate relatively smoothly to remote learning, due to their ability to access suitable devices and internet connectivity, as well as benefiting from support from teachers and parents (Le Grange, 2020). Lack of access to online learning compounds pre-existing inequalities in the education system in South Africa, further entrenching the intergenerational cycle of poverty (Spaull, 2015; Le Grange, 2020).

AGYW shared their experiences of how being deprived of face-to-face interaction with teachers and other learners, fostered feelings of isolation and lacking support. Additionally,

AGYW described challenges in not being able to ask teachers for clarifications or explanations, which left them feeling confused and unable to understand course content. Apart from the obvious negative effects that school closures have on learning and education, young people also experience a loss of pastoral support, and social interactions inherent in classroom socialization (Marques and Braidwood, 2021). Classroom contact and interactions are a key component in the development of social skills amongst learners; and those learners who are "tactile learners" will be disadvantaged by online classes (Adnan and Anwar, 2020; Oluka et al., 2021). As described by AGYW in our study, the loss of face-to-face interaction with teachers makes it harder to access both educational and psychosocial-support from teachers; creating barriers to comprehension of course material and grasping complex concepts, as well as reducing AGYW access to trusted adults (Laher et al., 2021; Tomlinson et al., 2021). Teachers themselves have also had to rapidly adapt to online teaching, which requires a different set of teaching skills, digital literacy and familiarity with technology, pedagogical knowledge and expertise (UNESCO, 2021a).

Respondents in our study described challenges with studying in the home environment, explaining that household situations were not conducive to learning. Distractions from family members, childcare responsibilities, and lack of suitable space for studying, make it difficult to focus on schoolwork. In many South African households, such as those in the communities in which our study was conducted, learners often do not have access to a suitable desk, materials, internet connectivity, a computer, or educated adults who are able to assist home schooling (Reddy et al., 2020). Evidence shows that learner achievement is strongly influenced by the extent to which a home environment is supportive of learning, and that access to learning resources, home support and online educator support are critical (Hannan and Arends, 2021).

Narratives of support for home-studying from parents were from a minority of respondents in our study. In the context of the communities in which our study was conducted, given the socio-economic realities, low levels of literacy and education levels amongst parents are likely to have limited the potential for parents to assist with high-school level assignments. In addition, families and households were experiencing unprecedented hardships, unemployment and loss of income, and assisting AGYW with their schoolwork may not have been a high priority. The support learners receive from members of their household has been identified as crucial in mitigating the negative impacts of school closures (Hoadley, 2020; World Bank, 2020). Parental support and supervision are key enablers for successful online learning (Tomlinson et al., 2021). Reports suggest that South African educators found the home learning component of the curriculum difficult to manage, and highly dependent on the capacity of parents to engage, manage and assist with schoolwork (Hoadley, 2020). Another way in which social capital determines a differentiation in learning experiences at home is due to the fact that many parents and caregivers in South Africa in lower income households are not sufficiently educated to assist with homework (Reddy et al., 2020; Spaull and Van der Berg, 2020; Keevy et al., 2021). Evidence suggests that the welfare of parents

and caregivers in South Africa has been negatively impacted by school closures, with increased childcare responsibilities, pressure to assist with schoolwork, anxiety and fear of infection, against the backdrop of economic stress and anxiety (Nwosu, 2021).

## School Drop-Out and Attrition

Data from our survey revealed that a substantial proportion of AGYW dropped out of education in 2020, and that the most socio-economically vulnerable AGYW were the most at risk of discontinuing education. Qualitative narratives described some of the factors that led to educational discontinuation, including loss of motivation, and challenges with applications to tertiary institutions due to COVID. In January 2021, the DBE reported that approximately 15% of public-school learners, totaling almost two million children, had not returned to school after the lockdown periods in 2020; it is predicted many of these absent children will become dropouts (Timm, 2021). Recent estimates suggest that more than 750,000 South African learners have dropped out of school since the pandemic began, a threefold increase from pre-epidemic rates, the highest in 20 years (Shung-King et al., 2021; Spaull et al., 2021; Tomlinson et al., 2021). Ten percent of adults in South Africa report that at least one learner in their household had not returned to school in 2021; amongst these, the highest rates of dropout are amongst the poorest households in South Africa (Shepherd and Mohohlwane, 2021; Spaull et al., 2021). Data from the DBE matric results for the 2020 cohort, show a drop of 5.1% compared to the previous year; it is predicted that 2021 cohort figures will be much worse (Timm, 2021). Survey data from 2020 indicated that matric students had lost a quarter of their final school year, while 88% hadn't returned to school by July 2020 (Timm, 2021).

Almost half of survey participants in our study reported they had been unable to continue with their studies due to COVID-19 related factors. Learners are likely to experience distress due to the inability to continue studies during the COVID-19 pandemic (Gittings et al., 2021). As is evident in the narratives of AGYW in our study, emerging evidence suggests that the online model of teaching has caused a loss of motivation to learn, without face-to-face engagement and encouragement from teachers and classmates (Adnan and Anwar, 2020). The effects of school closures jeopardize gains made in learning outcomes and educational attainment observed over recent years, exacerbating the pre-existing challenges in the South African education system (UNESCO, 2021a). A key concern is the disengagement of learners from education through school attrition and drop-out, particularly amongst female learners, most especially those from disadvantaged backgrounds, who are disproportionately affected by school closures and drop-outs (Favara et al., 2021; Shung-King et al., 2021; UNESCO, 2021a; Wernli et al., 2021). Dropping out of school has significant consequences for the life trajectories of AGYW; those that spend a significant amount of time out of school are unlikely to return (Tomlinson et al., 2021). Adolescents and young people who drop out of school are more likely to have limited earning potential, chronic unemployment, lower socio-economic status, and more likely to engage in risk behaviors (Spaull, 2015; StatsSA, 2019; Favara et al.,

2021; Tomlinson et al., 2021). In addition, education impacts economic productivity, which means that a decline in educational attainment and increased dropout rates would have a negative impact on South Africa's economic stability (Timm, 2021).

## Educational Resilience

Alongside AGYW narratives describing challenges with education, there were also narratives of resilience. Some AGYW found ways of coping, remaining motivated and focused, demonstrating resourcefulness and creativity, in order to reduce disruption to their education and not fall behind. Some respondents described receiving assistance with studying from other people at home, such as parents or partners. A few respondents also cited other sources of educational support and assistance including fellow students, teachers, online learning platforms,<sup>7</sup> and volunteer-supported online programs. Notably, those AGYW who sought remote help, academic support and accessed online resources had access to the internet, which facilitated their home studying. Even the most highly motivated learners require access to sufficient bandwidth, connected devices, and some level of technological competency to take advantage of online learning resources (World Bank, 2020). Resilient learners can be understood as those that manage to succeed in school despite adverse conditions, while others from the same socially and economically disadvantaged backgrounds and communities do not (Waxman et al., 2003). Understanding the factors that bolster or enable resilience, distinguishing resilient learners from non-resilient learners, could inform the design of educational interventions (Waxman et al., 2003). These multi-level factors enabling resilience are likely to exist at the individual, family, school, structural, and socio-economic levels (Waxman et al., 2003).

## Implications for Policy and Practice

Narratives of educational resilience suggest that structural supports need to be in place, in order reduce disruptions to education, and mitigate the negative impacts of school closures. The vast majority of school-age children in the country have experienced severe interruptions in their education due to multiple deprivations including food and income insecurity, challenging home environments, and a lack of access to appropriate technology and internet connection (World Bank, 2020; Shung-King et al., 2021). The closure of schools and tertiary institutions has disproportionately impacted the most vulnerable and marginalized children, adolescents and young people, worsening existing disparities and educational inequity within the South African education system (Motala and Menon, 2020; Hannan and Arends, 2021). School closures increased levels of hunger, undermining closely interlinked nutrition and educational outcomes. Careful planning, monitoring and intersectoral coordination are required to prepare for possible future lockdowns (DBE, 2021).

Despite concerted efforts by the South African government to provide accessible online learning resources during the period of school closures, through zero-rated applications, and

<sup>7</sup>Such as [www.khanacademy.org](http://www.khanacademy.org) and <https://learn.mindset.africa>.

mobile network operators reducing data costs, poor network connectivity and lack of access to personal internet enabled devices, continued to be a challenge for learners from poor families, and those in rural areas or under resourced communities (Mhlanga and Moloi, 2020; Landa et al., 2021). The global shift to online schooling and education relies on the assumption of access to technological resources. In a country with some of the highest mobile phone data costs in Africa, even prior to COVID-19, South Africa had a low infrastructural starting point with existing digital divides (Czerniewicz et al., 2020). Access to technology and internet connectivity among South African learners is not equal, and therefore the majority of learners in the country, especially those from poor communities, in households where internet access is poor (or non-existent), who are already disadvantaged, have great difficulty accessing online learning (World Bank, 2020; Tomlinson et al., 2021). Unequitable access to the internet, reliable and unlimited connectivity, digital infrastructure and access to devices suitable for learning, has exacerbated and widened pre-existing social inequalities (UNESCO, 2021b).

Our findings illustrate the challenges AGYW face in continuing education in the context of COVID; considering the links between falling behind in education and dropping out of school, we can expect that there will be many more AGYW dropping out of school going forward. The development of appropriate, gender-sensitive policies and programs will be needed to ensure continuity and equity in education, and reduce the negative impacts of school closures on the most vulnerable and marginalized learners, particularly AGYW (UNESCO, 2021a). South African educational institutions, public and private sector stakeholders, civil society organizations, and government entities need to work together to develop intersectoral strategies to ensure a smooth transition to remote learning (Kola et al., 2021; Oluka et al., 2021). Intersectoral collaboration enabling educational inclusion and access has been shown to be possible and successful, as with the zero-rated educational sites offered during school closures (Czerniewicz et al., 2020). Digital learning strategies need to include efforts to improve technological skills and digital literacy amongst both learners and teachers (UNESCO, 2021b). Teachers and educators will require support, guidance and capacity-development in order to best support learners, and make the transition to remote education successful (World Bank, 2020; UNESCO, 2021a).

Efforts are needed to address the structural drivers of school dropout and the “digital divide” (Tomlinson et al., 2021). Addressing barriers to access of technology and the internet is urgent; without reducing the “digital divide,” achieving equality in education will not be possible (Tomlinson et al., 2021). Since a vast proportion of South African learners only have access to smart-phones for online learning, there is a need to consider the accessibility of user interfaces (Majanja, 2020). Free and open-source digitized teaching and learning resources and materials need to be made available for access on a variety of devices, operating systems and software applications optimized for restricted bandwidth and sporadic internet access (Donner et al., 2011; World Bank, 2020; UNESCO, 2021a). Capitalizing on the near universal access to a mobile phone in South African

households, compared to the low availability of desktop and laptop computers, ensuring that online learning is mobile-friendly would help to ensure access by the widest possible user base (World Bank, 2020).

Infrastructure at government schools needs to be improved, to ensure that both teachers and learners have access to basic digital technology and internet connectivity (Oluka et al., 2021; UNESCO, 2021a). Facilitating internet access at all educational institutions would be a step in the right direction, however, would be of limited benefit during school closures if internet could only be accessed on campus (Majanja, 2020). Therefore, investment in technology such as Wi-Fi-capable devices for use by both learners and teachers would be one way of addressing inequities in technology (UNESCO, 2021b). Given that mobile data in South Africa is prohibitively expensive, with South African users paying more for data than those using the same mobile operators in other countries, it is important that the government and private sector jointly consider strategies to address these costs, particularly when they impact negatively on education (Keevy et al., 2021). Mobile operators should enable zero-rated educational sites, and digital learner platforms should be developed with minimal data usage (Keevy et al., 2021).

The provision of support to enable, motivate and encourage learners to return to school and continue with their education is critical (Tomlinson et al., 2021). Educational institutions are not only sites of learning, but can also be nodes of care and support, and conduits through which to provide preventive and support measures to adolescents and young people (Shung-King et al., 2021; Tomlinson et al., 2021). In order to do so, there needs to be a strengthening of psychosocial support services for learners, teachers and parents (Keevy et al., 2021; Shung-King et al., 2021). Given how critical a conducive home environment and family support is for successful home learning, parents/caregivers themselves require support (Keevy et al., 2021). In addition to building technological infrastructure to enable internet-based remote learning, simple, lower-tech interventions have been shown to mitigate learning loss in lower socio-economic settings and contribute to better learning outcomes, especially when combined with teacher support, learning materials, and involvement of parents (Hoadley, 2020).

## Study Strengths and Limitations

Several limitations to the survey sampling should be noted. A limitation in the design of the survey was reflected in the final survey sample realization, which was lower than expected. The success of the sampling strategy was dependent on AGYW being contactable by phone, therefore those who were not contactable by phone are likely to be different to, and possibly more vulnerable than those who have access to working phones which is likely to have introduced a bias in the study findings. The survey sample comprised intervention beneficiaries and therefore might not be representative of the general AGYW population in sampled districts, it is possible that AGYW not reached by the intervention may be more vulnerable than those enrolled. A limitation of the qualitative interviews relates to the potential for social desirability bias. There were several advantages to the remote data collection method, including the potential

for increased disclosure of sensitive or socially undesirable behavior (reduced social desirability bias). Additionally, remote interviewing enabled data collection to occur during COVID-19 lockdowns, from participants across a wide geographic area, including remote rural areas.

## CONCLUSION

Our findings lend support to an emerging evidence base showing that pre-existing inequalities in South Africa are being exacerbated by the closure of educational institutions as a response to the COVID-19 crisis. Addressing structural barriers to educational equity, particularly in the pandemic context, including access of technology and the internet, is urgent.

## DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository and accession number can be found below: South African Medical Research Council, <https://www.samrc.ac.za/intramural-research-units/HealthSystems-HERStory>.

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## ETHICS STATEMENT

Ethical approval was granted by the South African Medical Research Council Research Ethics Committee. All participants provided informed consent. For participants under 18 years of age, parental/caregiver consent was obtained prior to conducting the assent process with the minor.

## AUTHOR CONTRIBUTIONS

ZD was the principal study investigator of the qualitative study component, performed analysis of data, and led the manuscript writing. KJ and CM were co-principal investigators of the study and conducted reviews of the manuscript. BB and CM were co-analysts and contributed to writing the manuscript. KB and DG were co-investigators of the study and conducted reviews of the manuscript. KM was one of the qualitative interviewers and contributed to analysis and writing the manuscript. TR contributed to the quantitative analysis. All authors contributed to the article and approved the submitted version.

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