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COVID-19 and its Influence on Academic Performance and Health Status of Tertiary Level Students in Jamaica

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Abstract

The Covid-19 pandemic has negatively influenced academic performance and the health status of students in Jamaica. The current study is a national cross-sectional survey, which revealed that almost 14 out of every 25 students in this study indicated having health issues due to online learning (i.e., back and eye problems). The challenges of online learning are not limited to health issues as 26.0% per cent of the sampled students cited that poor internet connectivity has influenced and contributed to their poor academic performance compared to 33.3% of NCU students. The area of residence even compounds the internet connectivity issue. Those who dwelled in rural zones are at a disadvantage compared to their urban counterparts in city-like communities. Another challenge experienced by students is that 11.3% have to travel long distances to use internet service (i.e., internet café, relatives and friends outside of their homes). The matter is even worse among NCU students, as 28.7% have to commute to access internet services. Some 27.0% of NCU students expressed a significant challenge to focus on schoolwork, and 54.1% stated that they are experiencing difficulties grasping the lessons on the virtual platform. The new era of online (virtual) learning has changed the landscape of teaching and learning. It has brought many challenges that some students neither have the resources or intellectual capabilities to cope with the litany of social dislocation which the pandemic has predicated. The students have to

cope with this newness and should incorporate their concerns into the decision-making process at the highest levels, where they can be effectively addressed.

Keywords: Academic performance, health, health status, Jamaica.

Introduction

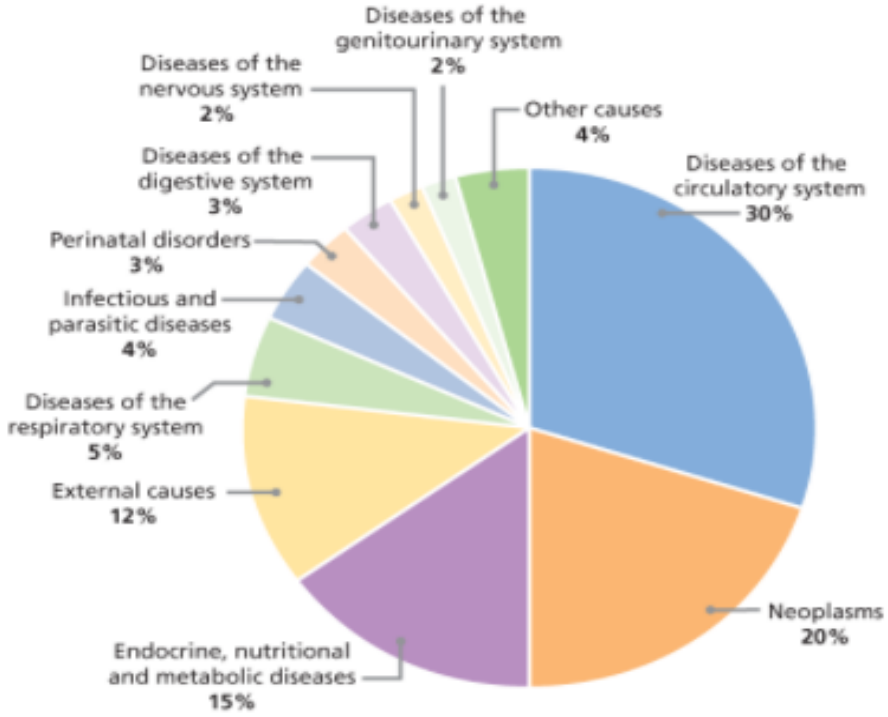
The Covid-19 pandemic has transformed all sectors of society. This highly communicable disease had reshaped the learning milieu more so since March 2020, when it reached the shores of Jamaica. Before the spread of Covid-19, the most frequent learning delivery was the face-to-face modality, which was the legacy educational platform adopted by many institutions. Virtual learning (distance or remote learning), which has existed for centuries, played a secondary role in traditional face-to-face techniques. Like many nations across the globe, Jamaica experienced a national lockdown of many of its industrial sectors and services, including the closure of face-to-face schooling (Gonzalez, de la Rubia, Hincz, et al., 2020; Pokhrel & Chhetri, 2021). This lockdown was to manage the spread of the virus by forcing the students across the various educational institutions to 'stay at home and continue their scholarly pursuits being homeschooled. A similar principled lockdown was also enforced for most of the country's workforce, encouraging those employees to telecommute. Initially, many educational institutions were irresponsive to actively engaging their students because it was a new era in which educational stakeholders were unschooled and vulnerable. In effect, many institutions were ill-prepared for the sudden transition to an eLearning platform for many subjects and courses being taught or offered. Gradually, many tertiary institutions were able to change their learning systems to remote and distance learning.

With the Ministry of Education in Jamaica not having a standardized or universally mandated remote or distant student learning platform, many secondary and primary school administrators had to use WhatsApp, Google Meeting, or Classroom to facilitate the learning process. This change in the student learning environment was relatively new for many students, parents, and teachers, and it had brought with it many challenges for the various stakeholders. Despite the newness and issues associated with virtual learning, a review of the literature has not revealed any extensive empirical studies on the threats and personal demandson the students and whether this virus had influenced their physical and mental wellbeing.

Jamaica is one of the largest English-speaking islands in the Caribbean region spanning a geographical zone of just over 10,900 $km^{2,}$ having a population of 2.8 million, and subdivided into 3 counties and 14 parishes (CIA, n.d.). As stated in the PAHO-WHO (2017) report, Jamaica is frequently subjected to environmental risks like "hurricanes, earthquakes, floods, droughts, and fires," and the ramifications from those encounters have resulted in the loss of lives along with overwhelming social and financial effects. These circumstances have brought momentous economic trials, among other psychosocial hardships, to bear on the Jamaican citizenry. The

Environmental Vulnerability Index (as cited in PAHO-WHO, 2017) indicated that Jamaica was among the top nations' with punishing and life-threatening exposures to natural causes and susceptibility to Acts of God.

The distribution of the population by age indicates that there are many youths of school age within the educational system. The mortality causes are depicted in Figure 1 but the COVID epidemic, given its devastating hold on the death rate in the U.S., becoming the leading cause of death in that country, overtaking heart disease from that coveted number one position (Crist, 2020; Beaubien, 2020; Newton, 2020;Romero, 2020; Weinberg, 2020; Zhou, 2020). This pandemic will be with us for a while has the probability of becoming the most lethal cause of death in Jamaica soon. The coronavirus is not known to be as deadly for the younger student population, but those students can still become very sick and spread diseases to others, including older adults (Bai, 2020; Janes & Elmer, 2020; Miller, 2020; NYT, 2020).



Source: (PAHO-WHO, 2017).

Figure 1.Mortality (Percentage of deceased for all ages, (male and female), 2011

Literature Review

The global spread of the COVID-19 pandemic has led to a shock wave in the whole education system on the earth (Bonk et al., 2020).According to Muthuprasad et al. (2021), approximately 38% of countries have declared the termination of face-to-face educational curriculum (Muthuprasad et al., 2021). As online education delivery mode increases, Paudel (2021) indicated that Covid-19 had affected upward to 99 per cent of learners in low-to-middle-income nations. In this environment, Gonzalez-Perez (2021) states that the Covid-19 stimulates an

environment for deteriorating economic growth, a higher level of inequality, and an increase in the vulnerability of students accessing online education. Caricom (2021) reported that the population of Jamaica needs accessible broadband technology to support all socioeconomic groups in the delivery of affordable healthcare, education, and economic programs. Despite these shortfalls, Brodeur et al. (2020) indicated that since the arrival of the virus (SARS-CoV-2),a lot was written on the pandemic's economic impact as governments and the private sector alike seek to grapple with the financial fall attributed to the virus. According to (Galama et al., 2019), low socioeconomic groups are more directly impacted by the availability of resources needed for the development, education, health, and family dynamics; low Socioeconomic status may hinder the development of children, adolescents, and adults. Outside of the financial influence of the virus, it has a significant effect on schooling, and by extension, the academic performance of students (Garcia and Weiss, 2020; Gonzalez, de la Rubia, Hincz, et al., 2020; Rothstein, 2020), which is equally the case at the tertiary level (Rodríguez-Planas, 2021), and one study went as far as to examine the influence of COVID-19 on children in Jamaica (CAPRI and UNICEF, 2020).

The purpose of this study is to assess the evolving and promptly increasing literature on the impact of the health and educational concerns of COVID-19 on the student community in Jamaica and their innate and instinctive perceptions of the pandemic concerning those variants.

Methods and Materials

This research uses the correlation design (Babbie, 2010; Henry, 1983; Blalock and Blalock, 1968; Creswell, 2014; Crotty, 2005; Rea and Parker, 2014; Neuman, 2014) because it seeks to identify the impacts that technological barriers have on students during the Covid-19 Pandemic. This study collected data from students at the primary, secondary, and tertiary institutions in Jamaica who reside in rural and urban areas. This study used primary data garnered through an online questionnaire platform using Google Forms. Due to the restrictions and preventive measures of Covid-19, it was to use the questionnaire method instead of an interview.

For this survey, the students were contacted by email and through direct calls as they were invited to participate voluntarily without any incentives. A convenience sampling technique was used to ascertain the respondents, and their completion of the questionnaire indicates consent of sort. In total, 280 persons participated in the survey. The survey that involved participants ages ranged from under 12 years to over 35 years who were forced to use the virtual platform, and it was conducted between June 3-5, 2020, after an outbreak of the Covid-19 in the country. No personal identifiers were placed on the instrument, which upholds the aspect of anonymity.

The data were analyzed using the Statistical Packages for the Social Sciences (SPSS)-percents, cross-tabulations, and displayed using tables and graphs. The level of significance for this study is 5% (0.05) by way of a two-tailed test.

Findings

Table 1 presents the demographic characteristics of the sampled respondents (n=280 students across Jamaica). The majority of the respondents resided in rural parishes (53.8%, n=147), 12-19 years old (58.6%, n=164), and attended tertiary institutions (59.7%, n=166). Of the sampled respondents (n=280), 59.3% (n=166) were no-NCU students and 40.1% (n=111) from NCU.

Table 1.Demographic Characteristics of sampled respondents, n=280

Details	**n (%)**
Area of Residence	
Urban	126 (46.2)
Rural	147 (53.8)
Age Cohort	
Under 12 years old	12 (4.3)
12-19 years old	164 (58.6)
20-35 years old	99 (35.3)
36+ years old	5 (1.8)
Current Educational Level	
Primary	23 (8.3)
Secondary	89 (32.0)
Tertiary	166 (59.7)

Table 2 presents selected socio-demographic characteristics disaggregated by student type (i.e., NCU and other students). Of the sampled respondents (n=280), 53.8% (n=135) indicated that they have been ill since commencing online classes. Of the number of NCU-respondent (n=111), 55.8% reported being ill (i.e., backache, eye pain). Furthermore, at least 28.0% (n=32) of the NCU respondents used the internet outside their homes.

Table 2.Age, Area of residence, class preference, Outside home internet usage, Owned Device for internet usage, and Ill-health by NCU Students, n=280

Details	**Students**		**Total**
	Non-NCU (n=166)	**NCU (n=111)**	
	N (%)	**N (%)**	**N (%)**
Age cohort[1]			
Under 12 years old	12 (7.2)	0 (0.0)	12(4.3)
12-19 years old	117 (70.5)	45 (40.5)	162 (58.5)
20-35 years old	33 (19.9)	66 (59.5)	99 (35.7)
36+ years old	4 (2.4)	0 (0.0)	4 (1.5)
Area of residence[2]			
Urban	67 (41.4)	58 (53.7)	125 (46.3)
Rural	95 (58.6)	50 (46.3)	148 (53.7)

Class preference[3]			
Face-to-face	145 (87.3)	95 (85.6)	240 (86.6)
Online	21 (12.7)	16 (14.4)	37 (13.4)
Outside home internet usage[4]			
Yes	10 (6.0)	13 (11.7)	23 (8.3)
No	139 (83.7)	79 (71.2)	218 (78.7)
Sometimes	17 (10.3)	19 (17.1)	36 (3.0)
Owned device for internet usage[5]			
No	7 (4.2)	3 (2.7)	10 (3.6)
Yes	158 (95.8)	107 (97.3)	265 (96.4)
Ill-health			
No	70 (47.6)	46 (44.2)	116 (46.2)
Yes	77 (52.4)	58 (55.8)	135 (53.8)

[1] $\chi^2(3)=50.053$, $P< 0.0001$
[2] $\chi^2(1)=3.979$, $P = 0.046$
[3] $\chi^2(1)=0.179$, $P = 0.672$
[4] $\chi^2(2)=6.346$, $P = 0.042$
[5] $\chi^2(1)=0.432$, $P = 0.511$

[6] $\chi^2(1)=0.281$, $P = 0.598$

Almost 27.0% (n=30) of the NCU-respondents indicated that they were experiencing challenges focusing on their schoolwork, 54.1% (n=60) had difficulty grasping the materials, 61.8% (n=68) reported having unstable internet service, 61.8% (n=68) noted power (electricity) outages, and 33.3% (n=37) suggested that the poor internet connectivity is responsible for their low academic performance. It should be noted here, that approximately 1 in every 5 NCU respondents utilize data plan. An extrapolation can that those who were using data plan would be at a disadvantage compared to those using WiFi.

Impact on Academic Performance

Table 3.Age, Area of residence, Class preference, Outside home internet usage, the Owned device for internet usage, and Ill-health by NCU Students, n=280

Details	**Students**		**Total**
	Non-NCU	**NCU**	
	N (%)	**N (%)**	**N (%)**
Inability to focus[1]			
No	125 (75.3)	81 (73.0)	206 (74.4)
Yes	41 (24.7)	30 (27.0)	71 (25.6)
Difficulty to grasp lessons[2]			
No	88 (53.3)	51 (45.9)	139 (50.4)

Yes	77 (46.7)	60 (54.1)	137 (49.6)
Internet Mode[3]			
WiFi	121 (73.8)	90 (81.1)	211 (76.7)
Data Plan	43 (26.2)	21 (18.9)	64 (23.3)
Internet Service Provider[4]			
Digicel	47 (29.4)	32 (30.5)	79 (29.8)
Flow	113 (70.6)	73 (69.5)	186 (70.2)
Unstable Internet Connectivity[5]			
No	77 (46.4)	42 (38.2)	119 (43.1)
Yes	89 (53.6)	68 (61.8)	157 (56.9)
Power Outages[6]			
No	102 (61.4)	43 (38.7)	145 (53.3)
Yes	64 (38.6)	68 (61.3)	132 (47.7)
Poor Internet Connectivity affect low academic performance[7]			
Yes	35 (21.1)	37 (33.3)	72 (26.0)
No	54 (32.5)	64 (57.7)	118 (42.6)
No Examination	77 (46.4)	10 (9.0)	87 (31.4)

[1] $\chi^2(1)=0.189$, $P=0.664$
[2] $\chi^2(1)=1.119$, $P=0.229$
[3] $\chi^2(1)=1.976$, $P=0.160$
[4] $\chi^2(1)=0.037$, $P=0.848$
[5] $\chi^2(1)=1.815$, $P=0.178$
[6] $\chi^2(1)=13.750$, $P<0.0001$
[7] $\chi^2(2)=43.287$, $P<0.0001$

Only 36.7% (n=103) of the sampled respondents indicated that they have been able to complete assignments on time, with 45.7% (n=128) sometimes stating (**Figure 1**). However, 45.9% (n=51) of NCU-respondents reported that they have been able to complete assignments on time compared to 19.8% (n=22) who stated 'no' and 34.2% (n=38) who indicated 'sometimes'. It should be noted here that approximately 1 in every 5 NCU-respondents has not completed their assignment at the stated time, which would affect their grade point average (GPA).

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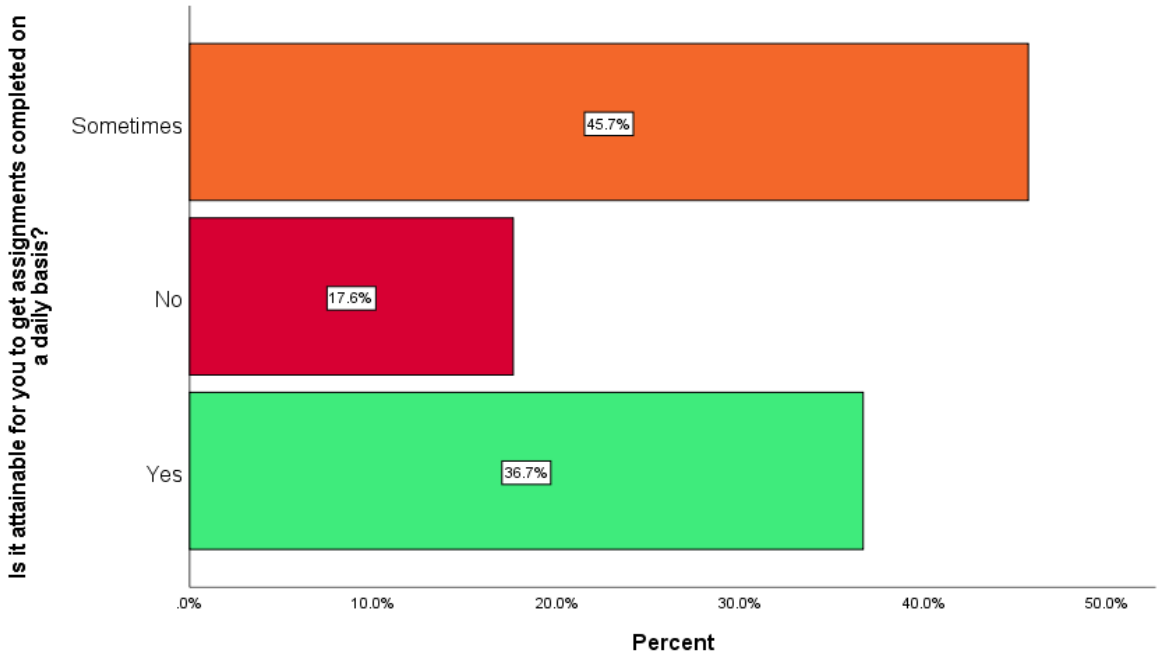

Figure 1.Sampled respondents' perspective on the attainability of completing assignments

NCU-respondents were more likely to complete their assignments on time (45.9%) compared to other students (30.5%; $\chi^2(2)=10.355$, $P = 0.006$), which is also the case for those who are unable to meet the deadline for assignments (Figure 2). However, non-NCU respondents were 1.6 times more likely to indicate 'sometimes' completing as stipulated by the deadline compared to NCU-respondents (**Figure 2**).

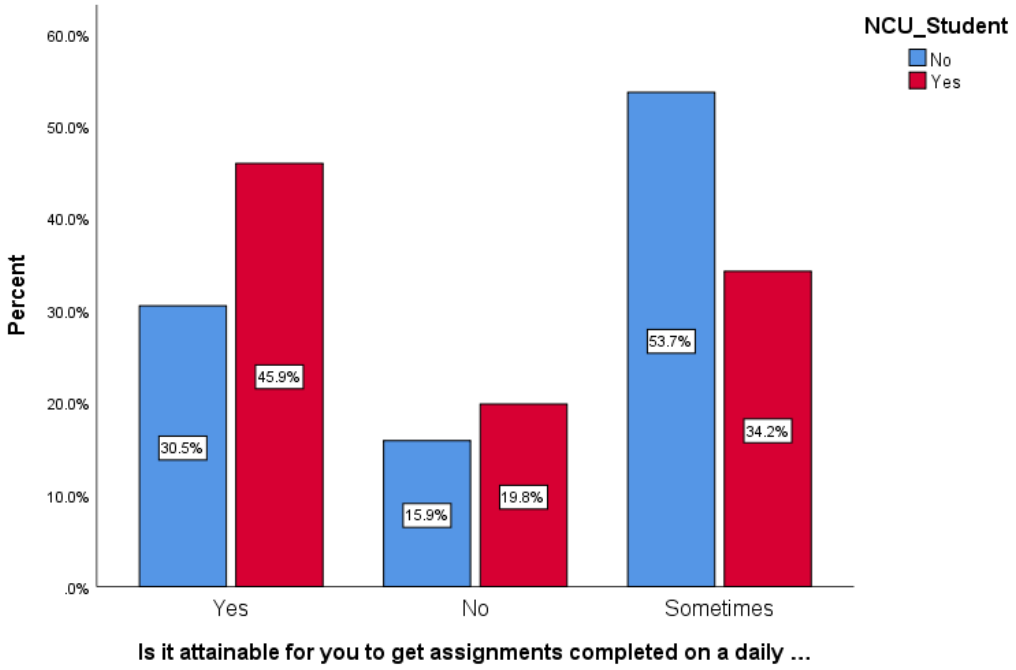

Figure 2.Respondents' perspective on the attainability of completing assignments by student type

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Figure 3 depicts the rating perspective of respondents as disaggregated by student type (Non-NCU and NCU). Of the NCU-respondents, 8.1% (n=9) of them rating their internet connectivity as excellent compared to 10.2% (n=17) of Non-NCU students ($\chi^2(3)=9.523$, $P = 0.023$). However, substantially fewer NCU respondents indicated that they experienced at least good internet connectivity. In fact, 40.5% (n=45) of NCU-respondents rating their internet connectivity at least 'good' compared to 50.0% (n=83) of Non-NCU respondents.

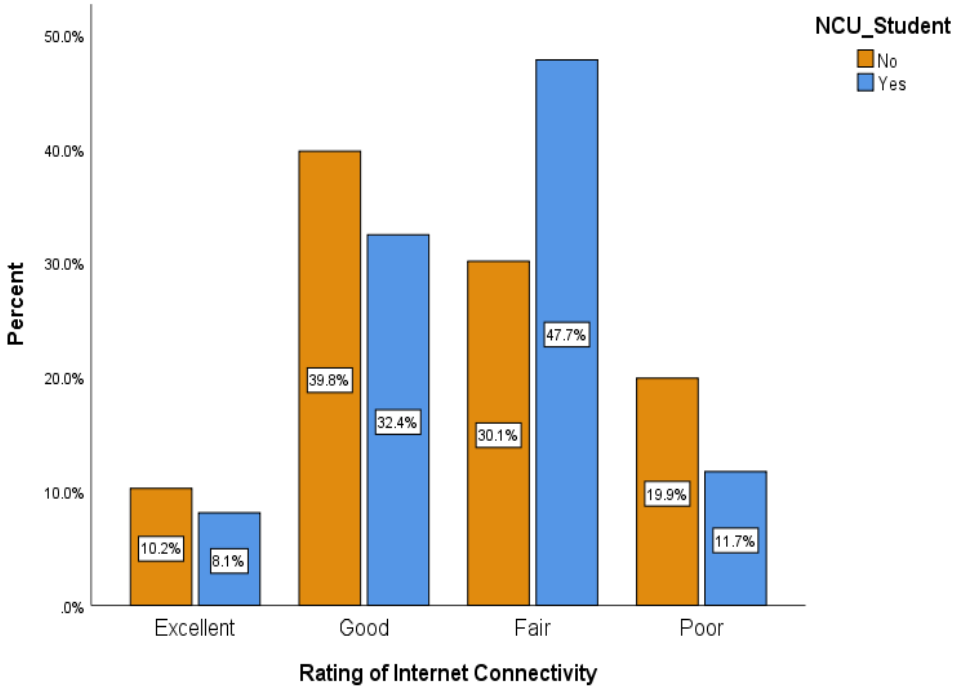

Figure 3.Respondents' rating of internet connectivity by student type

The sampled respondents are highly dissatisfied with the internet service provided by Flow compared to Digicel (**Figure 4**; $\chi^2(3)=8.990$, $P = 0.029$) as it relates to poor internet connectivity, 80% (36) of those who subscribed to Flow and 20% (9) who subscribed to Digicel. However, the same percentage of respondents attributed excellent internet connectivity to both internet service providers.

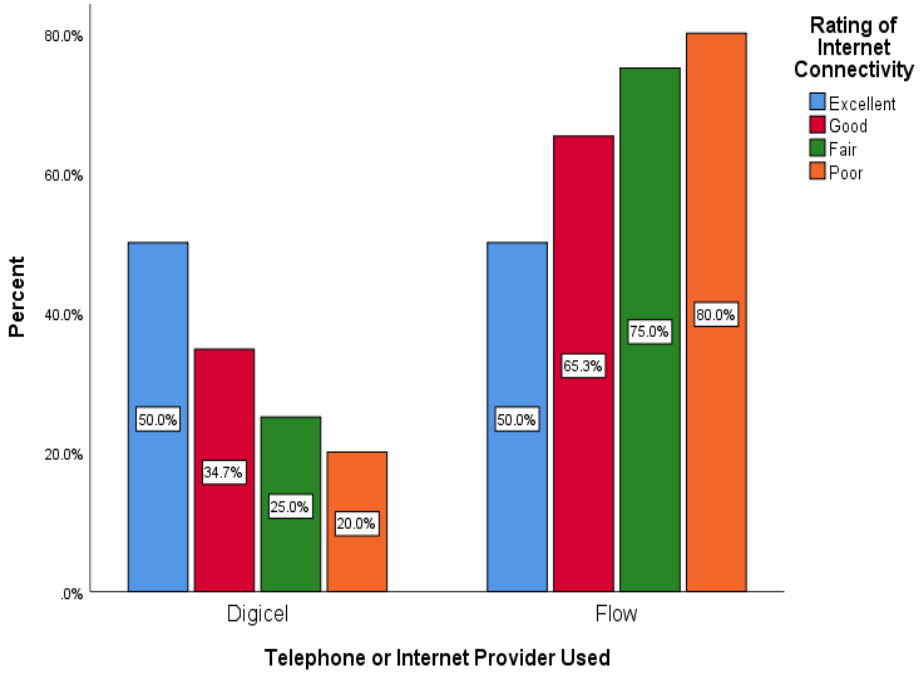

Figure 4.Perspective of respondents on internet/phone service provider by the rating of internet connectivity

Almost 5 times more respondents who indicated that poor internet connectivity contributed to their low academic performance were subscribers to Flow ($\chi^2(1)=7.492$, $P = 0.006$) and that the internet service provider is identified as contributing to lower GPA (**Figure 5**).

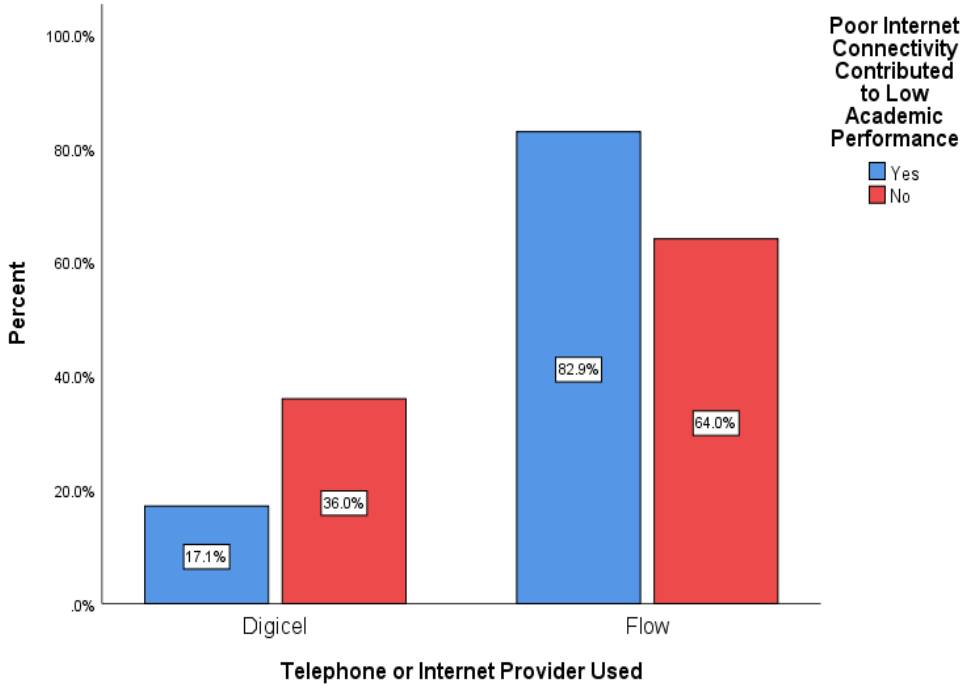

Figure 5.Respondents' perspective on an internet service provider by poor internet connectivity contributing to low academic performance

The academic performance of the sampled respondents who resided in rural Jamaica was more influenced by poor internet connectivity offered by the service provided, especially among those who used Flow's internet services ($\chi^2(1)=5.026$, $P = 0.042$), which was not the case for those who dwelled in urban areas ($\chi^2(1)=2.960$, $P = 0.085$).

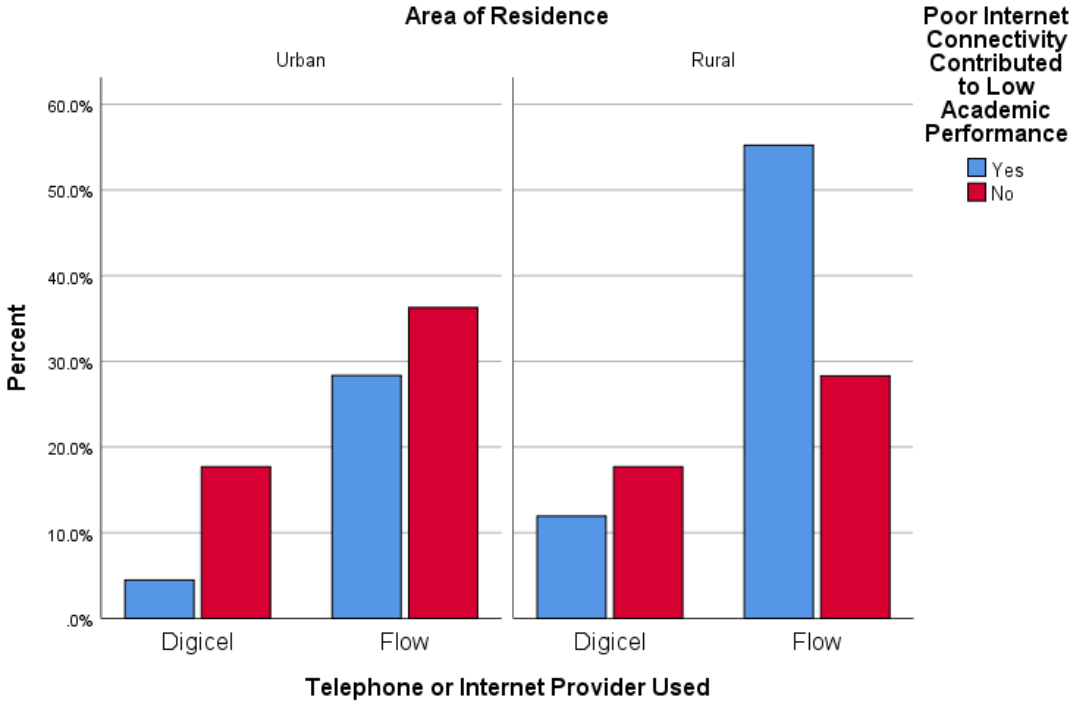

Figure 6.Respondents' perspective on an internet service provider by poor internet connectivity contributing to low academic performance controlled for by area of residence

The respondents who resided in rural areas were likely to indicate having unstable internet service, particularly those who used Flow's internet service (**Figure 7**). This means that those from rural Jamaica are at a disadvantage related to online learning compared to their urban area colleagues. The challenge of rural area students should be included in the planning process. They will be left behind on the premise of inconsistent and unstable internet services, and the service provider compounds this.

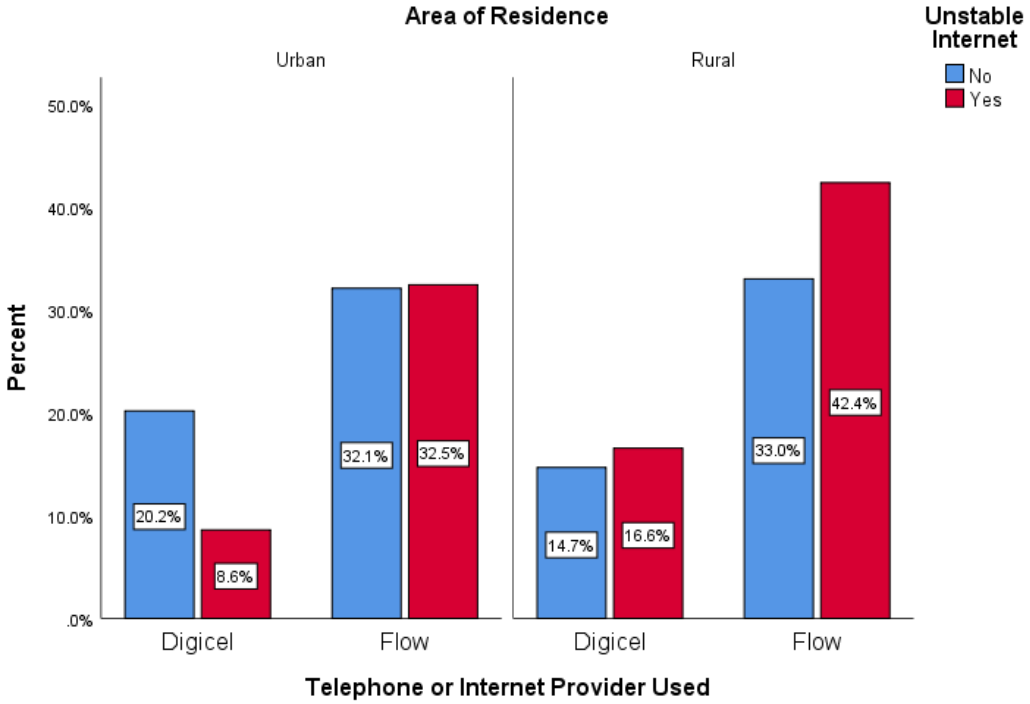

Figure 7.Respondents' perspective on an internet service provider by unstable internet service controlled for by area of residence

Discussion and Conclusion

Academic performance is influenced by many intrinsic and extrinsic variables (Chiu, & Xihua, 2008; Chouinard, Karsenti, & Roy, 2007; Fenollar, Roman, &Diaz, 2008; Hairani, Poly, Mara, & Bangi2020; Khalaila, 2015; Kingston, 2013; Lim, & Chapman, 2015), and educational institutions must critically examine some of these as a result of the Covid-19 pandemic. Covid-19 is redefining the traditional modality of pedagogy, and there is no simple approach that policymakers can take to address the challenges without empirical inquiries. The current cross-sectional and correlational study has provided many insights that can be used to frame the new realities for academic instruction and schooling. Students at Northern Caribbean University are having to change with the new and emerging facts of Covid-19. Some of the challenges identified by this study are; 1) increased ill-health, 2) poor internet connectivity, 3) lower academic performance, 4) the psychology of adjusting to a new classroom environment with many variables, 5) the psychology of fear and its influence on individual persons and their functionalities, 6) the environment to be defined teaching with still many unknowns, and 7) the responsivity educators, which concurs with past studies (Bonney, Amoah, Micah, Ahiamenyo, & Lemaire, 2015; Kingston, 2013; Shaw, Gomes, Polotskaia, & Jankowska, 2015; Shamaki, 2015).

The challenges brought on by Covid-19 can be effectively navigated if policymakers are willing to modify their current modus operandi. NCU is poised to learn from the Covid-19 pandemic and be a leader in responding to the changing realities and developing a framework for others to

chart. This pandemic should be used as a teaching-learning moment to which NCU can guide their institution and others. One of the most fundamental avenues is the need for facilitators to utilize the emerging information to guide their actions. The reality is that no established standard can guide our actions, so policymakers must prepare all stakeholders as information unfolds.

Maintaining high academic standards is a matter that policymakers must review as they navigate challenges during this era. The foremost recommendation of this study is for facilitators to employ multimodal testing and measurement strategies as this will aid the new dynamics that are emerging from the various challenges brought on by Covid-19. Other recommendations are 1) the introduction of soothing music in classes (beginning or otherwise), 2) breaks at the interval (30 minutes), 3) multimodal testing, 4) use of games in the teaching-learning process, and 5) the redesigning, of course, outlines in keeping with virtual learning.

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