

The Impact of COVID-19 on Access, Delivery, and Utilisation of Essential Primary Healthcare in Region 4 of Guyana

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ABSTRACT

Background: The COVID-19 pandemic has posed considerable operational challenges for public health systems to deliver COVID-19 response and maintain essential health services simultaneously. Low-resource countries were significantly affected by the COVID-19 pandemic because of weak health infrastructure, reduced health systems capacity and significant socio-economic inequalities.

Objectives: This study aimed to explore the impact of COVID-19 on access, delivery and utilisation of essential primary health services in Region 4 of Guyana.

Methods: An explanatory sequential study design was used to collect data on health services utilisation from 41 health centres in Region 4. The statistical data informed a semi-structured questionnaire to explore community and healthcare providers' perceptions of the COVID-19 pandemic and their experiences concerning access and delivery of primary health services during the COVID-19 pandemic in Guyana. The statistical data were analysed descriptively with SPSS version 20 software and by time series trend analysis. The qualitative data were descriptively analysed with SPSS software and by thematic analysis.

Results and Discussion: An analysis of the statistical data showed a stable trend of essential health services utilisation from January 2018 – May 2019. However, during the COVID-19 pandemic, there were significant decreases in utilising all essential health services across the 41 health centres of Region 4. Healthcare providers and community perspectives and experiences identified fear and anxiety among the common causes for decreased access to primary healthcare during the pandemic.

Conclusions: This study confirmed that during the COVID-19 pandemic, access, delivery, and utilisation of essential health services were severely affected in the health centres of Region 4 in Guyana.

Keywords: COVID-19 pandemic, essential primary healthcare, health centres of Region 4 in Guyana

BACKGROUND

Literature Review

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), commonly called coronavirus disease 2019 (COVID-19), is a highly infectious viral respiratory illness with significant morbidity and mortality. [1-2] The inaccessibility of essential primary health services during the COVID-19 pandemic has caused morbidity and mortality beyond what is directly attributed to the pandemic and has exacerbated underlying health conditions and increased ailments and deaths from non-COVID diseases. [3-4]

COVID-19 and Essential Health Services

The World Health Organisation defines essential health services as health interventions critical to saving lives and improving health outcomes and recommends that low-resource countries define what health services are essential according to their epidemiological profile, health system capacity and available resources. [5-6]

The COVID-19 pandemic has overwhelmed even the most robust health systems globally.^[7] As a result, health authorities face considerable operational challenges in delivering a COVID-19 response and maintaining essential health services safely.^[8]

The Global Fund studied the impact of the COVID-19 pandemic on health services in low-resource countries and identified: maternal and child healthcare (antenatal clinics and vaccination), chronic disease clinics, and screening and testing for non-COVID infectious diseases such as HIV, tuberculosis, and malaria in endemic countries as health services that are most critical towards positive health outcomes.^[9] In a separate study, the World Health Organisation surveyed 105 high-income, middle-income and low-income countries to assess the magnitude of the impact of COVID-19 on health systems worldwide. 90% of countries reported interruptions in essential health services; however, disruptions of health services in low and middle-income countries were more severe than in high-income countries.^[10]

The World Health Organisation conducted a survey on the continuity of essential health services during the COVID-19 pandemic and encountered the following challenges: Diversion of human resources or health facilities to establish COVID-19 treatment centres; shortages of Personal Protective Equipment (PPEs) affecting safe healthcare delivery; and restrictions in transport impeding access to health centres.^[7] Additionally, fear and stigma related to COVID-19 and a pre-existing mistrust of healthcare in the public system have reduced health services utilisation in low-resource countries.^[8] Blanchet et al. showed that diminished accessibility of health services discouraged healthcare-seeking behaviour in patients with life-threatening conditions which required urgent medical intervention.^[6] Many other studies have confirmed decreased emergency room utilisation since the COVID-19 pandemic.^[10-12]

In response to the pulse survey, The World Health Organisation released an operational guidance to maintain essential health services during the COVID-19 pandemic with protocols to prioritise essential health services and mitigation strategies to assuage the effect of COVID-19 on public health systems.^[13] The WHO operational guidance is an invaluable tool to inform urgent decision-making during the COVID-19 pandemic and is essential to improve access and utilisation of routine essential health services in low-resource countries.^[6]

COVID-19, Ethics and Social Inequalities

The COVID-19 pandemic emphasized inequalities already severely impacting marginalised and disadvantaged people, affecting lives and livelihoods, often deciding between survival and death.^[14] Individuals who lack the financial resources to visit health centres or purchase the necessities essential to sustain a healthy life were more severely affected during the COVID-19 pandemic.^[15-16]

The Independent Panel for Pandemic Preparedness and Response recommend that national and global health policies include universal health coverage and equity and that resources are evenly distributed to prioritise the maximum health benefits for all patients who need healthcare, not just patients who seek healthcare concerning COVID-19.^[14,8]

In Guyana, communities of lower socio-economic status have encountered significant barriers to accessing and utilising essential healthcare. Rural areas have poor health infrastructure and lesser human and material resources than urban health facilities. The COVID-19 pandemic has exposed and exacerbated the significant underlying inequalities within the communities of Guyana, and health authorities need to employ guidelines to ensure equal distribution of health services throughout Guyana.^[17-18]

Healthcare Structure in Guyana

Healthcare in Guyana comprises of public and private systems. Before the COVID-19 pandemic, the health centres of Region 4 provided well-used preventive, diagnostic, and treatment services. These services comprised OBGYN (Obstetrics and Gynecology) services that provided antenatal and family planning clinics; pediatric clinics – Growth and development clinic, immunisation clinics; and chronic disease clinics that screened and treated for hypertension and diabetes mellitus and other non-communicable diseases. The primary health centres of Region 4 also provide a daily (8 am – 4 pm) walk-in clinic for acute or chronic illness, including infectious diseases such as tuberculosis, HIV and malaria, and dengue, which are the common vector-borne diseases prevalent in Guyana. In the initial months of the COVID-19 pandemic, secondary and tertiary care facilities suspended speciality clinics and elective procedures to minimise patient exposure and avoid hospital overcrowding. In addition, healthcare workers and resources of the primary healthcare system were diverged to screening and surveillance of COVID-19, leaving the health centres poorly equipped and staffed.

Aim and Rationale for Study

In the constantly evolving COVID-19 pandemic, there is a lack of accurate and up-to-date information on the barriers to access and delivery of safe essential health services. Few countries have reliable data to monitor the extent of disruptions to essential health services leading to misinformed mitigation strategies to overcome barriers to accessing care.^[13]

To the researcher's knowledge, this is the first study done in Guyana to assess the impact of the COVID-19 pandemic on access, delivery, and utilisation of essential health services. This research aims to determine the impact of COVID-19 on access, delivery, and utilisation of essential primary healthcare in Region 4 of Guyana. The researcher investigated the challenges

and barriers to accessing essential health services from a community perspective and the constraints to delivering safe healthcare from health providers' perspectives. In undertaking this study, the researcher endeavours to inform regional and national health authorities of the effects of COVID-19 in primary healthcare and provide recommendations and solutions to an escalating challenge.

METHODS

This research utilised an explanatory sequential design to determine the magnitude of the impact of COVID-19 on the access and delivery of essential primary healthcare during the COVID-19 pandemic in Region 4 of Guyana.

In the initial quantitative phase of this study, the researcher accessed the records departments of 41 health centres in Region 4 and investigated the utilisation of health services by collecting statistical data centred on the number of patients attending the OBGYN, Pediatric and Chronic disease clinics from January 2018 to May 2021. These statistical data were verified at the Office of the Regional Health Authority for authenticity.

Consequent to a profound analysis of the quantitative data collected from the health centres, a semi-structured questionnaire was designed to explore community and primary healthcare providers' perceptions towards COVID-19 and their experiences on health services utilisation during the COVID-19 pandemic. This questionnaire was conducted through telephone interviews, video calls and an online survey from June 24th 2021, to July 12th 2021.

Finally, a descriptive analysis using quantitative data from the health centre records and qualitative data from a semi-structured questionnaire to demonstrate the impact of COVID-19 on the access, delivery, and utilisation of essential primary health services for two years pre-COVID-19 pandemic (January 2018 - February 2020) versus the current period of the COVID 19 pandemic (March 2020 – May 2021).

Study setting

Guyana is a low-resource country of 196,850 Km², located on the northern tip of South America. Region 4 is located on the Coastal Plain and encompasses the capital city - Georgetown, and its suburban areas. 90% of Guyana's population lives on the Coastal Plain, which comprises only 10% of the total land area and is about 40 miles at its widest point. [19-21]

Region 4 is the most densely inhabited region of Guyana, with about 450 000 of Guyana's 790,464 population and accommodates the only public tertiary hospital in Guyana, two secondary hospitals and 40 primary health centres in urban, suburban, and rural areas. As a result of the densely populated capital city and suburban areas, Region 4 has the highest incidence of COVID-19 cases compared to other areas and is considered the most vulnerable region for COVID-19 infection and transmission. [19-21]

Recruitment of participants

Participants for the qualitative phase of the study (primary healthcare providers and members of the local community) were recruited through the supervising doctor and the nurse in charge at the health centres, who acted as "gatekeepers" to inform potential participants about the study and distributed information flyers with research details and contact information for the researcher. The potential participants were asked to share the information flyers with other community members. In addition, a large flyer was posted on the public notice boards of the 41 health centres of Region 4, where healthcare providers, patients and relatives who attend the health centre can read the flyer and pull a stub with the researcher's telephone number and email address. All potential participants were advised that participation is voluntary and that they can withdraw at any point during the interview. The potential participants were asked to indicate an interest in the study by sending an SMS, WhatsApp, or email message to the researcher.

The eligibility criteria for this study were that all participants should be over 18 years of age, be a resident and be a health centre member in Region 4.

Data collection

In the initial quantitative component of this research, data were collected from the records department of the local health centres and verified at the Office of the Regional Health Authority of Region 4. The parameters measured were attendance at the antenatal and family planning clinics (OBGYN), pediatric and chronic diseases clinics from January 2018 to May 2021. The accumulated data was then examined and tabulated on a Microsoft Excel document.

Following an analysis of the statistical data collected from the health centres, a semi-structured questionnaire was designed to explore community and primary healthcare providers' perceptions towards COVID-19 and their experiences on access to primary health services during the COVID-19 pandemic. The questionnaire explored participants' demographics, health behaviours, health services availability, accessibility, and utilisation before and during the COVID-19 pandemic. Also, recommendations were sought for improved healthcare access and delivery at their community health centres.

This study used heterogeneous purposive sampling to select ten (10) participants per health centre (four healthcare providers and six local community members) for telephone or video call interviews. Also, a Google Forms online survey option was available to participants who could not schedule an appropriate time to be interviewed or for participants who preferred to complete the online survey instead of being interviewed.

Initially, the researcher made a telephone call to receive verbal consent and book an appointment for the interview; then returned a telephone call or video call at the agreed time for the interview, ensured that the participants were comfortable, and advised that each interview would last for about 15 – 20 minutes. After consent was obtained

from the selected participants, the researcher conducted virtual semi-structured interviews via telephone or video, depending on the participant's preference. The Google Forms online survey was available for any participant who fit the eligibility criteria. This qualitative phase started on June 24th, 2021, and concluded at 1200 hours on July 12th 2021. Unfortunately, face-to-face interviews were not conducted due to the COVID-19 pandemic.

All telephone and video interviews were conducted in English and recorded on a password-protected mobile phone. The online survey was also done in the English language. All softcopy data was transferred to a password-protected folder on a password-protected computer to which only the researcher has access. The data was backed up on an encrypted hard drive for safety.

The interviews and online surveys required the participants' demographics and affiliation with a health centre. This data was then anonymized and stored separately, thereby ensuring confidentiality.

Data analysis

The quantitative data collected from the records department of the primary health centres were translated into Microsoft Excel and coded to SPSS Version 20 software. In addition, descriptive and time series trend analyses were done to show trends in utilising essential health services.

The qualitative data obtained through telephone interviews, video calls, and the online survey were integrated and coded to SPSS Version 20 software. In addition, descriptive and chi-square analyses were performed to assess the differences between healthcare providers and community perspectives and experiences concerning the COVID-19 pandemic. Finally, thematic analysis was used to present healthcare providers' and community perspectives and experiences of the pandemic in the following themes.

1. Community perceptions towards COVID-19 and their experiences on access, delivery, and utilisation of health services during the COVID-19 pandemic.
2. Healthcare providers' perceptions towards COVID-19 and their experiences on access, delivery, and utilisation of health services during the COVID-19 pandemic.

RESULTS

From May 15th to June 15th, statistical data was collected from 41 health centres of Region 4 regarding attendance at the antenatal, family planning, pediatric and chronic disease clinics. This data was tabulated on Microsoft excel, coded to SPSS version 20 software, and descriptive and time series trend analysis was done.

The quantitative data from the health centres informed a questionnaire to explore community and healthcare providers' perceptions of the COVID-19 pandemic and their experiences regarding access, delivery, and utilisation of primary health services during the COVID-19 pandemic. These interviews were conducted from June 24th - July 12th, 2021, among residents of Region 4 and primary healthcare providers via telephone calls, WhatsApp video calls, or a Google Forms online survey.

The statistical data collected from the health centres showed that COVID-19 affected access and delivery of essential health services, affecting utilisation. The interviews and online surveys reinforced these results by demonstrating the barriers to the community's access and utilisation of health and the constraints of the healthcare workers in providing safe and efficient healthcare.

Presentation of Quantitative Findings

Chart showing essential health service utilisation and the percentage change in health services utilisation in the 41 health centres of Region 4 before and during the COVID-19 pandemic

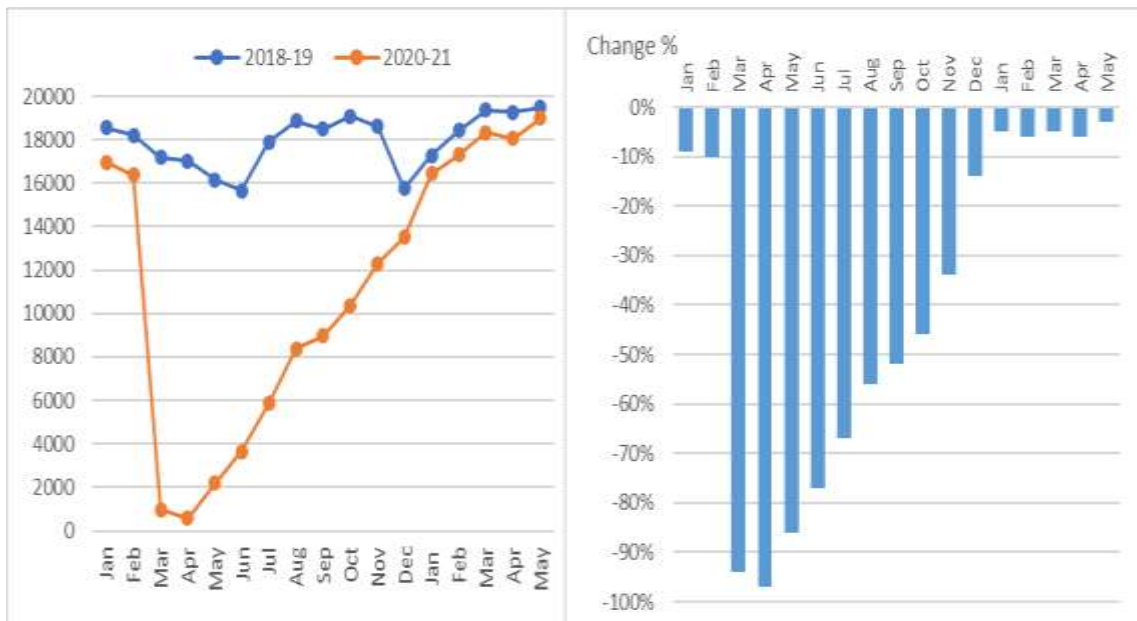


Fig. 1. Monthly health centre visits for all essential health services (rate over time) Blue line - Monthly health centre visits before the COVID-19 pandemic (Jan 2018-May 2019)

Orange line - Monthly health centre visits during the COVID-19 pandemic (Jan 2020 -May 2021)

Panel A – Total health services utilisation in the 41 health centres of Region 4

Panel B – Percentage change in utilisation of health services before and during the pandemic

Chart showing essential health service utilisation in the 41 health centres of Region 4 before and during the COVID-19 pandemic

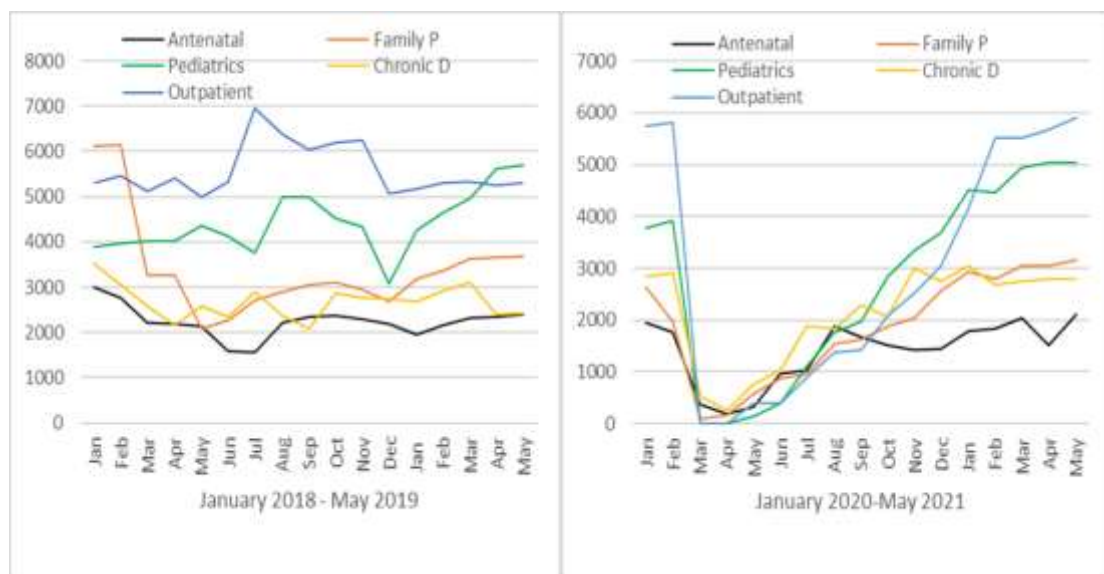


Fig. 2. Monthly utilisation for all essential health services in the 41 health centres (rate over time)

Panel A – Monthly utilisation for all essential health services before the COVID-19 pandemic (Jan 2018 -May 2019)

Panel B - Monthly utilisation for all essential health services during the COVID-19 pandemic (Jan 2020 -May 2020)

Blue line - Monthly Outpatient service utilisation before and during the COVID-19 pandemic

Orange line - Monthly family planning utilisation before and during the COVID-19 pandemic

Black line – Monthly antenatal service utilisation before and during the COVID-19 pandemic

Green line - Monthly pediatric service utilisation before and during the COVID-19 pandemic

Yellow line - Monthly chronic disease service utilisation before and during the COVID-19 pandemic

DISCUSSION

The months before the COVID-19 pandemic (January 2018 - May 2019) and January 2020 – February 2020 (Fig. 1) shows a stable trend in utilising essential primary health services by the local population. This is an expected finding since the conditions and resources of the health centres were stable during that period. However, the statistical data from March 2020 through to May 2021 reveal the consequences of the COVID-19 pandemic on utilising primary health services. The most significant decline was from March - July 2020 relative to the same period in 2019 (Fig. 1). The months of March-July 2020 were the early months of the COVID-19 pandemic, and the decline in health centre visits is attributed to barriers to access to healthcare in the community, constraints to providing health services by healthcare providers and diminished resources and capacity of the public health system.

The decrease in antenatal clinic visits during the early pandemic months is highly concerning (Fig.2). This has affected prenatal care, a crucial aspect of ensuring that pregnant women and developing babies stay healthy throughout pregnancy. The American College of Gynecology ACOG) advise frequent check-ups and screenings for pregnant women. They note that these should include one check-up per month during weeks 4–28 of the pregnancy, two per month during weeks 28–36, and weekly check-ups from then on until the birth.

In a systematic review assessing global changes in maternity care provision during the COVID-19 pandemic, Townsend et al. found that in low-resource settings, the restructuring of health services led to reduced pregnancy care and increased maternal mortality and stillbirths.^[22]

The family planning clinic showed a precipitous drop compared to the same period for the year before the COVID-19 pandemic (Fig.2). As a result, unplanned and unwanted pregnancies will likely increase, with negative consequences for

both mothers and babies. The United Nations Population Fund (UNFPA) estimated that in low-resource countries, over 12 million women could not access family planning services because of the COVID-19 pandemic, which would have resulted in over 1.4 million unintended pregnancies.^[23]

There was a substantial decline in the utilisation of pediatric clinics in the early months of the COVID-19 pandemic (Fig. 2). The pediatric clinics of the primary healthcare system of Guyana are responsible for caring for neonatal follow-up, child clinics, and immunisations. Of particular concern is the consequent decline in vaccination rates for the pediatric population of Region 4. The impact of reduced access to pediatric services and reduced immunisation coverage has also been shown in a study in Cameroon by Enyama et al. ^[24] Findings like this study were described in a review by the Global Fund. In a study of 502 health facilities from countries in Africa and Asia, the authors found that antenatal first visits declined by 43% in 2020 compared with 2019, and under-5 child consultations decreased by 74%.^[9]

Presentation of Qualitative Findings

In order to explore community and healthcare providers' perceptions of the COVID-19 pandemic and their experiences regarding access, delivery, and utilisation of primary health services during the COVID-19 pandemic, a total of 410 patients were purposively identified from 41 health centres of Region 4. Ten (10) participants were purposively selected per health centre, six (6) from the community and four(4) healthcare providers.

The potential participants were contacted by telephone to give consent, schedule an appropriate time, and decide whether they preferred a telephone or video interview. Of these 410 potential participants, the researcher was able to schedule an interview with 388 persons. However, 371 interviews were conducted due to postponements or

cancellations of interviews, or because participants could not complete the entire interview. Of the 371 completed interviews, 318 (85.7%) were done via telephone, and 53 (14.3 %) interviews were done through a WhatsApp video call. Of the 371 completed interviews, 152 (41%) were from healthcare providers.

Additionally, 251 participants, randomly selected, completed an online survey on Google Forms. Sixty-five (25.9%) healthcare providers completed the online survey. The telephone interviews and online survey results were combined to 622 participants, of which 217 (35%) were healthcare providers and 405 (65%) community members.

Community and Healthcare Providers' Perception on accessibility to health services during the COVID-19 pandemic

Factors	Health Worker 217 (34.9%)	Community Member 405 (65.1%)	Chi-square p-value
	Number (%)	Number (%)	
Urgent medical care (n = 615) *			
Not accessible	42 (19.4)	148 (36.8)	0.000
Sometimes	93 (43.5)	213 (53%)	
Accessible	79 (37.1)	41 (10.2)	
Usual medication for chronic care diseases (n = 612) *			
Not accessible	17 (8.2)	72 (18.1)	0.000
Sometimes	104 (49.2)	268 (67.1)	
Accessible	90 (42.6)	59 (14.8)	
Laboratory or imaging test (n = 614) *			
Not accessible	69 (32.3)	107 (26.8)	0.000
Sometimes	65 (30.6)	249 (62.2)	
Accessible	79 (37.1)	44 (11.0)	
Contraception services (n = 345) *			
Not accessible	18 (10.0)	71 (31.3)	0.007
Sometimes	71 (40.0)	88 (38.8)	
Accessible	89 (50.0)	68 (29.9)	
Immunisation services (n = 362) *			
Not accessible	9 (4.9)	69 (28.2)	0.002
Sometimes	61 (34.4)	65 (26.7)	
Accessible	107 (60.7)	110 (45.1)	
Antenatal care (n = 331) *			
Not accessible	6 (5.0)	53 (25.8)	0.004
Sometimes	44 (35.0)	68 (33.3)	
Accessible	76 (60.0)	84 (40.9)	

* Some missing data

Table 1: Community and Healthcare Providers' Perception on accessibility to health services during the COVID-19 pandemic

Community and Healthcare Providers' experience on decreased utilisation of health services during the COVID-19 pandemic

Reasons	Health Worker 217 (25.9%)	Community Member 405 (74.1%)	Chi-square p-value
	Number (%)	Number (%)	
Fear of getting infected with COVID-19 at facilities	177 (81.5)	337 (83.3)	0.889
Recommendations to the public to avoid health centre visits for mild illness	70 (32.3)	139 (34.4)	0.876
Recommendations to the public to delay routine care visits until further notice	50 (23.1)	109 (26.9)	0.661
Not knowing where to seek care	37 (16.9)	89 (22.0)	0.485
Lockdown, curfew, or stay-at-home order	47 (21.5)	111 (27.4)	0.443
Disruption in public transportation	37 (16.9)	109 (26.9)	0.149
Facility closures due to COVID-19	197 (90.8)	394 (97.3)	0.037
Reduced or changed opening hours at facilities due to COVID-19	37 (16.9)	115 (28.5)	0.093
Provision of specific services suspended at facilities due to COVID-19	53 (24.6)	146 (36.0)	0.126
Longer wait times at facilities because of the current crisis context	104 (47.7)	301 (74.2)	0.000

Table 2: Community and Healthcare providers' experience on decreased utilisation of essential health services during the COVID-19 pandemic

Community experiences and perceptions towards COVID 19

During the COVID-19 pandemic, statistical data from the health centres showed a reduction in health services utilisation in all

primary health centres. From a community point of view, the findings of the interviews and surveys showed the following principal reasons for the barriers in access and utilisation of health services in Region 4 (Table 2).

Apprehension about being infected with COVID-19 when accessing health centres:

Most participants believe that accessing a health facility during the COVID-19 pandemic exposed them to an increased risk of acquiring COVID-19. The participants described a general feeling of fear or anxiety, especially in the early stages of the pandemic.

Some participants also stated that in the early months of the COVID-19 pandemic, there was a stigma to visiting a health centre or hospital because the community perception was that they were either infected with the COVID-19 virus or would have contracted COVID-19 from the clinics. Thus, in the early months of the pandemic, the stigma of COVID-19 prevented the utilisation of health services. Similar findings were also reported in studies by Ahmed et al., Hebbar et al. and Singh et al. [8,15,25]

In Guyana's initial mitigation strategies to prevent the spread of COVID-19, all of the patients who tested positive were placed in government quarantine facilities. The sudden removal of family members and the ensuing stigmatisation by the community led to the widespread concealment of COVID-19 infections, which were detrimental in a few cases. Fear of discrimination and ostracisation from the community were significant barriers to accessing and utilising healthcare by patients suffering from COVID-19. [26]

Decreased access to healthcare:

Community members reported that the COVID-19 pandemic had pervasive impacts on their access to routine and emergency health services. In the early months of the pandemic, almost all public healthcare facilities operated at an emergency level and

some of the local health centres were re-purposed as COVID-19 testing sites.

The pandemic led to unemployment and loss of income, particularly for families with lower socio-economic backgrounds and individuals who are daily-wage workers, exacerbating socio-economic inequalities and causing detrimental effects on health and healthcare utilisation. [8] Socio-economic support is necessary to facilitate individual and public compliance with COVID-19 response measures. Furthermore, community confidence and compliance with COVID-19 mitigation measures are more likely in a stable economic situation. [27]

Healthcare workers' experiences and perceptions towards the COVID 19

During the COVID-19 pandemic, statistical data from the health centres showed a reduction in health services utilisation in all primary health centres. From the healthcare provider's point of view, the findings of the interviews and surveys showed the following reasons for constraints in delivering essential health services in Region 4.

Diversion of human resources to establish COVID-19 treatment centres or health centres re-purposed as COVID-19 screening, testing and treatment centres:

Some health centres in Region 4 were converted into COVID-19 dedicated centres for surveillance, testing and treatment. Therefore, health services in the local community pertaining to these facilities were re-located to the nearest health centre. The health centres also encountered staff shortages due to absences, limited transportation, or staff being transferred to work in COVID-19 dedicated centres.

Lack of incentives and public transportation:

Most of the study participants, healthcare providers and community members felt that the Government could do more to alleviate difficult financial circumstances. There was a 100 % selection to the option of stimulus

checks and food baskets as mitigation measures to alleviate the loss of income and jobs.

Lack of adaptive measures: Some participants expressed frustration that they could not communicate with their regular healthcare providers for advice. Health authorities in Guyana need to re-assess the current approach to health services delivery and incorporate telemedicine interventions, particularly for chronic disease patients who need regular follow-up and advice. In addition, virtual technology could act as an enabling factor for healthcare utilisation by increasing the availability and accessibility of health services, especially for people from rural and remote areas, which will also make it more affordable and have fewer time constraints.

A survey of health workers from 47 countries showed that two-thirds of the healthcare providers believe that the change in the delivery of health services during the COVID-19 outbreak has severely impacted the health conditions among chronic disease patients.^[9]

The health centres tried to maintain essential health services, despite challenging situations. For example, when service was unavailable at a health centre, patients were re-directed to another health centre or a secondary health facility (regional hospital). Other factors that influenced access to services included a reduction in public health campaigns to encourage the local population to seek health care as the entire focus of the public health system shifted to the COVID-19 pandemic.

Healthcare providers are the core of any sustainable health system. However, COVID-19 has directly threatened the safety and ability of healthcare providers to perform their job. Data from the interviews and surveys showed that 78.9 % of healthcare workers felt moderate- highly susceptible to contracting a COVID-19 infection.

The results of this research are very similar to the Global Fund study, the authors found

that antenatal first visits declined by 43% in 2020 compared with 2019, and under-5 child consultations decreased by 74%.^[9] Low-resource countries had substantial maternal and child mortality increases due to the disruptions of primary healthcare. Pediatric care was more vulnerable to disruptions and accounted for the most significant number of additional maternal and child deaths. Fear, mistrust, and lack of transportation due to the COVID-19 pandemic are the main reasons for the decline in health services utilisation.^[9]

Although mental health was not an objective of this research, the researcher noted that several participants seemed to have mental health problems during the interviews. This is consistent with a study by Gloster et al. on the adverse effects of COVID-19 on mental health.^[28]

Recommendations

The WHO survey on the continuity of essential health services during the COVID-19 pandemic in 105 countries suggested that health authorities revise and implement the following strategies to alleviate the impact of COVID-19 on essential health services: accessible healthcare, identify health priorities, implement adaptive measures such as telemedicine and taking medicines to the community and inform the local population on health service changes and re-direct patients to open health centres.^[9]

Accessible healthcare: Although the COVID-19 pandemic has diminished health resources, health authorities need to reinforce health systems to manage the COVID-19 pandemic concurrently and offer essential health services to the general population. At the same time, healthcare providers must be protected by ensuring a safe environment to provide health services. Furthermore, health authorities must recognise the impact of minimised essential primary health services on short-term, medium-term, and long-term community health and emphasise understanding the benefits and risks of every COVID-19

mitigation approach to incorporate the right strategy to alleviate the burden of the pandemic on primary healthcare. Mitigation measures should be adapted to suit the context in which they are implemented, and health authorities record and learn from the successes and failures of mitigating the diverse phases of the COVID-19 pandemic.^[7,9]

Identify health priorities: There is a need for improved monitoring of access and delivery of essential healthcare. For example, any health service delivery and utilisation changes at regional and national levels should be analysed and reported, as infection rates are likely to vary throughout the COVID-19 pandemic.^[7]

Adaptive measures such as telemedicine and taking medicines to the community: In response to the health services disruption caused by COVID-19, health authorities can devise innovative approaches to enable the safe implementation of health services and mitigate the negative impacts of the COVID-19 pandemic. For example, in the study conducted by the Global Fund, the health centres with adaptive measures for the delivery of non-COVID essential health services witnessed less decline in health service utilisation. Some adaptive measures include prescribing medications for long-term use (months) to reduce health centre visits, switching the distribution of medicines from a centralised approach to a door-to-door delivery system and using telemedicine instead of an in-person consultation.^[9]

The use of telemedicine for consultations and delivering medicines to the community in a door-to-door system reveals how the COVID-19 pandemic can catalyse a positive change, accelerating new approaches to medicine and creating innovations to improve health service delivery. However, implementing these new approaches requires additional resources such as PPEs for healthcare providers, technical support for online services, and adjustment of

procurement and supply systems to enable longer-term prescriptions of medicines.^[9]

Inform the local population on health service changes and re-direction of patients to open health centres: The World Health Organisation advise that health authorities should maintain open communication with the local population about infection control measures, healthcare services' availability, and the importance of seeking care for non-COVID-19 conditions such as the chronic disease clinic for non-communicable diseases, OBGYN clinics for antenatal care and family planning services, and pediatric clinics for vaccination and child health services.^[5]

Vaccination for COVID-19: Health authorities and healthcare providers should design awareness campaigns to disseminate information concerning the safety and efficacy of the COVID-19 vaccines. The vaccines are easily accessible and free of cost to the local population. Lethal COVID-19 infections can be prevented by universal vaccination coverage, especially among vulnerable groups.^[29]

Follow-up study and future research: As the COVID-19 pandemic evolves, this research should be periodically updated to reflect the current situation and provide up-to-date information for effective response measures. Moreover, the results of this study can be utilised for future program planning and policymaking to deliver effective primary healthcare services during health emergencies in Guyana.

Future research is necessary to establish which vulnerable patient groups and essential health services were most affected by the COVID-19 pandemic and which mitigation strategies were the most effective so that health authorities can pre-emptively develop strategies and policies to lessen the impact of future health emergencies.

Limitations

This study evaluated the primary health system of Guyana in a time of remarkably high health services demand due to the ongoing COVID-19 pandemic. Therefore, this research should be considered within the context of the COVID-19 pandemic, as community perceptions towards access and delivery of health services may change when health authorities can dedicate more resources to essential primary health services.

Region 4, especially the capital city of Georgetown, has a higher population density than the rest of Guyana. Population density is a very competent predictor of the incidence of COVID-19, which explains the higher rates of infection and mortality in Region 4.^[30] Therefore, the findings of this research may not be consistent with infection and mortality rates in less metropolitan and more rural areas of Guyana.

The interview and survey respondents' population does not entirely represent Region 4. Due to safety considerations during the COVID-19 pandemic, our study population was limited to participants with a landline telephone, mobile telephone, or computer to complete the online survey. For example, the elderly and disadvantaged groups without a mobile phone or internet access would not have participated in this research. This selection bias limits the participation of certain groups in the community and affects the generalisability of this research.^[31]

Ethical considerations

Ethical approval for this research was attained from the Regional Health Authority of Region 4, Guyana and the Ethical Review Board of the University of Essex, UK.

Participants were recruited through a senior doctor or nurse at the health centres who acted as 'gatekeepers' and were informed of the research through an information sheet and the public notice board at the respective health centres. Participation in this study was voluntary; the participants could stop

the interview and withdraw from the study at any point. The confidentiality and anonymity of the participants were maintained during all stages of this research. The COVID-19 pandemic has mentally challenged most of the world's populace. Gloster et al. in a study of over 10,000 international participants, found that approximately 10% of the population suffered from moderate stress and depression.^[28]

In this study, during the interviews, when some participants expressed mental health problems to the researcher, they were given contact information for the mental health department of the COVID-19 response team of Region 4. In addition, the researcher consulted the mental health department of the COVID-19 response team before the interviews and received advice on how to proceed with participants who required psychiatric support.

CONCLUSIONS

The findings of this study are in accordance with similar studies done in China, India, Nepal, and South Africa.^[8,25,32,33] This research demonstrated the influence of the COVID-19 pandemic on access, delivery and utilisation of essential primary health services in Region 4 of Guyana. Essential primary health services such as antenatal, family planning, pediatric and chronic disease clinics were severely diminished in rural and urban health centres. However, since May 2020, the utilisation of health services has improved steadily and is almost at pre-pandemic levels.

Within the local population of Region 4, widespread apprehension of COVID-19, limitations in transportation, and minimised essential health services at the primary health centres were significant barriers to access and utilisation of health services. Among healthcare providers, the lack of PPEs, fear of transmission of COVID-19 to family members and diversion of primary healthcare resources and staff to manage COVID-19 centres were notable barriers in

delivering essential health services during the COVID-19 pandemic.

Public health authorities need to improve health systems in primary healthcare and enforce proven COVID-19 mitigation strategies designed for the local population of Region 4. Besides increasing COVID-dedicated health services, essential primary health services should be prioritised continuously. For example, the use of telemedicine instead of in-person consultations and the delivery of medicines to the communities can be incorporated to optimise healthcare utilisation during the diverse phases of the COVID-19 pandemic. [3,9,13]

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