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Challenges Associated With Healthcare Service Delivery during Covid-19 Era in Rwanda

Ntawigenera Narcisse [1]*, Nzeyimana Godefroid[1], Niyodusenga Alphonse[2]
1.Catholic University of Rwanda, Faculty of Public Health and Human Nutrition, Department of Public Health
2.University of Rwanda, School of Medicine and Pharmacy, Department of Clinical Biology, Huye, Rwanda

ABSTRACT

From 2019, the world has faced the pandemic of high severity ever inexperienced: COVID 19. It has called the efforts of various stakeholders for prevention of its propagation, treatment of infected persons, limitation of its effects, etc. Healthcare workers have been at the forefront of response to COVID-19, risking their lives and their physical and mental health. Despite many efforts to improve the overall quality of healthcare service delivery during COVID-19 era, a number of patients reported to receive inadequate healthcare service. The objective of this research was to understand factors associated with the quality of healthcare service delivery, especially those linked to COVID-19 pandemic. Findings of research will contribute on the efforts for effective strategies for quality assurance in healthcare services delivery. This research was conducted in Kigali City, Southern and Eastern provinces of Rwanda, from January to April 2022. 385 respondents were identified among healthcare service providers and beneficiaries of those services. Data was collected using a questionnaire and interview guide. Quantitative data collected using a questionnaire was analyzed using SPSS version 22. On the other hand, qualitative data collected through interviews was analyzed using thematic analysis method. Results from data analysis were discussed before addressing conclusion and recommendations. The big proportion of healthcare service providers (56%) and beneficiaries (61%) ranked healthcare service delivery as good, while 78.6% of beneficiaries and 100% of healthcare service providers confirmed that they have observed the change in healthcare service delivery during this COVID-19 era. The great change was reported by 3.6% of beneficiaries, while only 17.8% of beneficiaries have not observed the change. The quality of healthcare service delivery has not been affected at the same level in all health institutions. The increased workload in health sector has been mentioned as the main factor which has strongly affected healthcare service delivery in public hospitals and health centers, while lockdowns have particularly affected healthcare service delivery for beneficiaries of referral hospitals. Specific short-term, medium-term, and long-term recommendations to strengthen health system or accessible high quality health care services during and after COVID-19 era were addressed.

Keywords: COVID-19, SARS-COV-2, healthcare, healthcare service delivery

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INTRODUCTION

Rwanda's Vision 2050 has five pillars including Human Development. Specific priorities under this pillar include universal access to high quality health care, universal access to high quality education and a transformed workforce for higher productivity (1). In that perspective, stakeholders in health sector are combining their efforts to improve the quality of healthcare service delivery.

From 2019, the world has faced the pandemic of high severity ever inexperienced: COVID 19. It has called the efforts of various stakeholders for prevention of its propagation, treatment of infected persons, limitation of its effects, etc. Politicians, leaders at various levels, security institutions, economists, community mobilisers, educators, journalists, etc. are involved in fighting against this pandemic. This work is done in collaboration and through the guidance of health professionals. COVID-19 caused by a novel SARS-COV-2, continues to create havoc across the globe, without leaving aside the health system (2). In their study, Otitoloju *et al* (3) reported that while few countries such as Mauritius, Ghana, South Africa, Botswana, Tunisia and Cape Verde had a medium to higher ability to carry out COVID-19 testing, the capacity in most African countries was low compared with their population size.

Healthcare workers are at the forefront of response to COVID-19, risking their lives and their physical and mental health. The conditions of work of healthcare workers not only affect their own rights, but also impact the rights of health service users, including their access to and quality of health services (4). Healthcare workers have been particularly vulnerable during the COVID-19 pandemic due to their high risk of exposure to the virus. As confirmed by the World Health Organization (WHO), around 14% of COVID-19 cases reported to WHO are among health workers. In some countries, the proportion can be as high as 35%. However, health workers represent less than 3% of the population in the large majority of countries and less than 2% in almost all low- and middle-income countries. Thousands of health workers infected with COVID-19 have lost their lives worldwide (5).

According to Mosadeghrad (6), quality healthcare is a subjective, complex and multi-dimensional concept. He believes that quality healthcare is "*providing the right healthcare services in a right way in the right place at the right time by the right provider to the right individual for the right price to get the right results"***.** Quality healthcare includes characteristics such as availability, accessibility, affordability, acceptability, appropriateness, competency, timeliness, privacy, confidentiality, attentiveness, caring, responsiveness, accountability, accuracy, reliability, comprehensiveness, continuity, equity, amenities and facilities. Ensuring safety and security, reducing mortality and morbidity, improving quality of life and patient involvement have also been seen as quality attributes (7). Quality of

medical services depends on the personal factors of the physician and patient, and factors pertaining to the healthcare setting and the broader environment. Differences in internal and external factors such as availability of resources, patient cooperation and collaboration among providers affect the quality of medical services and patient outcomes. Supportive leadership, proper planning, education and training and effective management of resources and processes improve the quality of medical services (8). Yet, COVID-19 pandemic has affected almost all of these factors.

COVID 19 appeared while Africa has limited health infrastructure and workforce, including a shortage of professionals trained in critical care and inadequate tertiary care facilities (specialized hospitals) equipped with intensive care units (ICUs) (9). In urban areas of Africa, health facilities are overcrowded with patients due to staff shortages, while in rural areas, unreliable transport and poor roads infrastructure remain key bottlenecks for access to medical care (10). In Rwanda, notable progress has been recorded in improving the health outcomes of the population. Health is among the main priorities of the country's policy, development agenda and strategic development planning. Based on the Rwandan Constitution, Articles 41 and 45, which states that all citizens have rights and duties relating to health; the country has committed to ensure universal access to affordable promotive, preventive, curative, and rehabilitative health services of the highest attainable quality (11). Nevertheless, COVID-19 pandemic has been a great test for the health system around the world, included Rwanda. Lockdowns and policy actions to curtail the transmission of COVID-19 have widespread health system, economic, and societal impacts. Community quarantines alongside transport and boarder restrictions have universally impacted health service access and delivery, affecting patients requiring specialist care the most (12).

This research was conducted for a better understanding of barriers and factors influencing the quality healthcare service delivery, especially those associated with COVID-19 pandemic. It is anticipated that a better understanding of these factors and their relationships can pinpoint better strategies for quality assurance in healthcare services, particularly in Rwanda, but probably in other societies as well.

MATERIALS AND METHOD

This cross-sectional study used both quantitative and qualitative methods. A questionnaire was given to 385 participants based in Kigali City, Southern and Eastern Provinces of Rwanda. This sample was calculated using Cochran's Formula. The effect size of 0.2 % was used to calculate the proportion of beneficiaries and healthcare service providers in the determined sample size. Therefore, the sample included 308 beneficiaries and 77 healthcare service providers. Respondents were identified in various categories of health facilities:

public and private health institutions, health posts, health centers, district hospitals and referral hospitals. Stratified random sampling method was used to collect quantitative data**.** Based on Rwanda Health Performance Report 2019-2020 (13), the sample size with reference to types of health facilities was calculated as presented in the table below. However, the calculated sample of 3 beneficiaries in Prison clinics and 1 Healthcare Service Provider was added to the sample of 3 beneficiaries and1 Healthcare Service Provider of referral hospitals, so that 8 respondents were identified in those institutions (referral hospitals).

Table 1: Number of respondents based on the types of health institutions

Facility type	Outpatient consultations in health facilities in FY 2019-2020	Sample size (Beneficiaries)	Sample size (Healthcare Service Providers)	Total
Health posts	3,824,343	62	15	77
Private Health Facilities	1,072,167	18	4	22
Health centers	11,302,357	185	45	230
Prison Clinic	175,223	0	0	0
CHW Home-Based Care	1,558,153	25	7	32
District and Provincial Hospitals	725,365	12	4	16
Referral Hospitals	203,011	6	2	8
Grand total	**18,860,619**	**308**	**77**	**385**

Source: Primary data

Based on NISR (2012), the sample size with reference to population of provinces was calculated as follows:

Table 2: Number of respondents based on their provinces

	Total population (NISR, 2012)	Beneficiaries	Healthcare service providers	Total
Kigali City	1,132,686	55	14	69
Southern Province	2,589,975	127	32	159
Eastern Province	2,595,703	126	31	157
Total	**6,318,364**	**308**	**77**	**385**

Source: Primary data

For healthcare service providers, respondents were identified based on their willingness and consent to respond to research questions. 6 medical doctors, 19 nurses, 24 allied health professionals, 14 administrative staff, 7 support staff in health institutions and 7 community health workers have participated in this research. They were identified in various health institutions, including public and private facilities.

In addition, semi-structured interviews with 18 key informants were conducted. Identification of respondents was based on the wish to complete data from questionnaire**.** The questionnaire and interview guide were constructed based on the objectives and the questions of research.

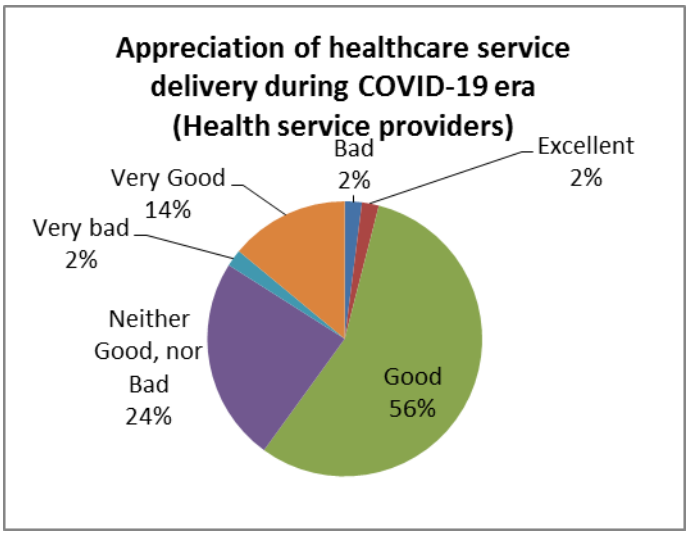
Data analysis was done using SPSS version 22 for quantitative data, while qualitative data was analyzed using thematic analysis method to identify, analyze and report patterns within

the data. Conclusion and recommendations were drawn based on results of both quantitative and qualitative data analysis.

Ethical considerations: This research was conducted after the reception of approval from Catholic University of Rwanda Ethical Committee. In addition, it has been administratively requested to Directors of Hospitals and health institutions to accept that this research may be conducted in their institutions and catchment areas. For ethical reasons, themes and quotes reported were anonymized, removing potential identifiers (e.g. roles, titles and location of practice).

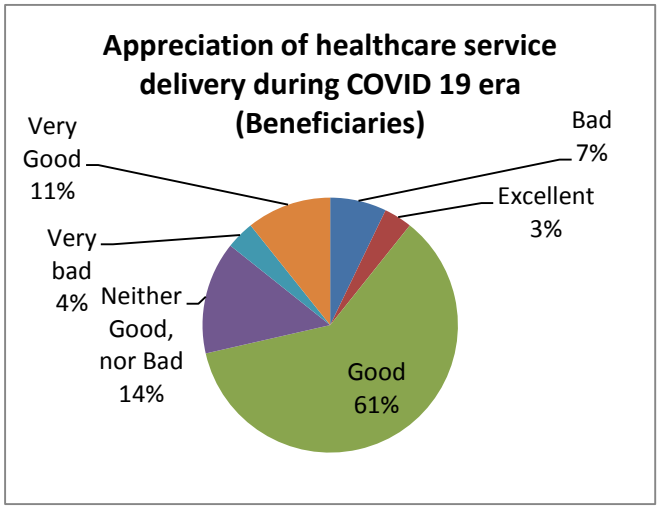
RESULTS AND DISCUSSION

Level of satisfaction with healthcare service delivery during COVID-19 era



Source: Primary data

Figure 1: Appreciation of healthcare service delivery during COVID-19 era by healthcare service providers



Source: Primary data

Figure 1: Appreciation of healthcare service delivery during COVID-19 era by beneficiaries of healthcare services

The results show that 2% of healthcare service providers confirmed that healthcare service delivery during COVID-19 era is excellent, while 14% confirmed that it is very good. The big proportion of healthcare service providers (56%) ranked healthcare service delivery as good, and 24% revealed that healthcare service delivery is neither good nor bad. The small proportion of healthcare service providers (2%) has expressed that the service is bad or very bad (2%). On the other hand, beneficiaries of healthcare service have provided almost similar responses: 3% confirmed healthcare service delivery during COVID-19 to be excellent, 11% said that it is very good, 61% judge healthcare care service to be good (the big proportion), while 14% confirmed that healthcare service delivery during COVID-19 era is neither good nor bad. The proportion of beneficiaries confirming healthcare service delivery during this COVID-19 period to be bad (7%) or very bad (4%) among beneficiaries is greater than the proportion of healthcare service providers (2%). No one of respondents said that healthcare service delivery is worse.

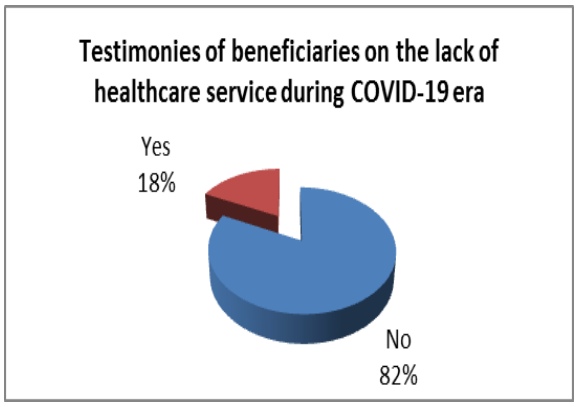
This difference in levels of appreciation between healthcare service providers and beneficiaries can be explained by the fact that perceptions of standards are not the same for the two groups. In fact, the standards of service providers are higher compared to those of beneficiaries, so that when not achieved, the service is underscored. For instance, one of beneficiaries said that the service is good, because service providers do never take the rest. However, a service provider in the same health institution said that the service is not good, because patients wait for a long time for service delivery during this COVID-19 era. On the other hand, the acknowledgement and valorization of their efforts for good service delivery influence them to over score their service, compared to beneficiaries. So, the proportion of respondents confirming healthcare service delivery to be bad or very bad among healthcare service providers is small compared to beneficiaries. "*Despite patients can wait for a long time, they are always served. No one go back home without being treated*". This statement was repeated by 76% of healthcare service providers. In the opposite, some patients judge the situation to be very bad: "*I am here from tomorrow. I have not been received and I still waiting for treatment. How can I say that the service is good? The service is very bad!"* This is a declaration of a patient who has confirmed that COVID-19 preventive activities including its vaccination have worsened healthcare service delivery in health institutions.

Reference made to the comparison between before and during this COVID-19 period, 78.6% of beneficiaries have confirmed that they have observed the change, while 100% of healthcare service providers have confirmed this change. However, there are 17.8% of beneficiaries who have testified that there has not been any change, while 3.6% confirmed to observe the great change.

Healthcare service delivery issues during COVID-19 era

Lack of healthcare service or poor healthcare service due to anti-COVID measures and preoccupation of service providers by COVID-19 related activities

Healthcare service providers were asked whether they have ever observed poor healthcare service delivery due to COVID-19 pandemic. 56% of them confirmed to be witnesses of poor healthcare service delivery due to this pandemic, while 44% said the opposite. 40% of them revealed to be aware of providing themselves the poor healthcare service due to COVID-19 pandemic. To explain this issue, respondents emphasized the fact that COVID-19 preventive measures including its vaccination and treatment of positive cases have increased the workload in health sector, while the human resource in this sector has not been increased. In addition, lockdowns with limitation of movements have affected healthcare service delivery in health institutions. The figures below present the consolidated responses of participants to the question of lacking healthcare service and poor healthcare service delivery during COVID-19 period.



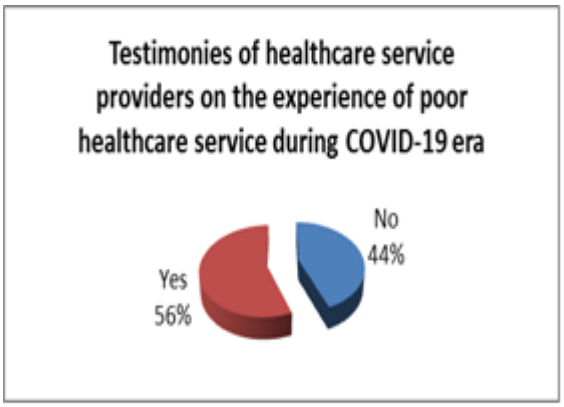


Figure 4: Testimonies on the poor healthcare service delivery during COVID-19 era

Source: Primary data

For data managers, registration of new born service was often postponed due to registration of data related to COVID-19 vaccination. Other respondents have confirmed that healthcare services which are judged not urgent like circumcision are not given during COVID-19 vaccination and lockdowns periods.

COVID-19 infections among healthcare service providers

Health workers, in particular those in contact with and/or who care for COVID-19 patients, are at higher risk of being infected with SARS-CoV-2 than the general population (14). The report from the International Council of Nurses, which conducted a survey of 50 countries, mostly from the Europe and the Americas, found that health worker infections ranged from 1-32% of all confirmed COVID-19 cases (15). During this study, 82% of healthcare service providers presented COVID-19 infections among healthcare service providers as the great challenge experienced during COVID-19 era. The same response was given by 37% of beneficiaries.

Abstention and detrimental self-protection in administration of some medical examinations and healthcare services

Mitigating and reducing the risk of SARS-CoV-2 infection among health workers is essential to protecting their well-being and reducing the spread of COVID-19 (16, 17). As expressed by respondents, some healthcare services like funduscopic examination were stopped in order to reduce COVID-19 infection risks and its propagation. 8 beneficiaries and 12 healthcare service providers have observed the challenge of service providers who are afraid of being contaminated and then, they were not helping beneficiaries accordingly. *"In some circumstances, we were afraid of doing some medical interventions or examinations. It happened that sometimes, we recommended COVID-19 test before treatment of presented problem*": revealed a healthcare service provider.

Findings of this research are in the same line with Holtz's statement according to which, the focus on COVID-19 reduced the access to standard health care services overall, as some

medical facilities either reduced or stopped offering some standard medical services or were overwhelmed with treating COVID-19 patients presenting acute symptoms of respiratory infection (18).

Challenges in using MoMo Pay for payment of healthcare services

The issue of using Mobile Money as the only payment method for healthcare services was expressed by 2 respondents as the challenge: one respondent said that patients without phones were complicated by payment procedures, while the other respondent has expressed the issue of Airtel Money's clients who could not use this service to pay healthcare services.

Determinants of quality of healthcare service delivery during COVID-19 era

Results of the study indicate that 78.6% of beneficiaries confirmed the change in healthcare service delivery during this COVID-19 era. 3.6% judge this change to be great, while 17.9 expressed that there has not been any change. According to them, the main factors influencing this change is the workload of healthcare service providers which has increased due to anti-COVID activities, the insufficient number of healthcare service providers compared to this workload, socio-economic effects of COVID-19, as well as contamination of COVID-19 by healthcare service providers. 100% of healthcare service providers confirmed that they have observed the change in healthcare service delivery during this COVID-19 era. The table below presents the points of views of beneficiaries on the factors influencing the quality of healthcare service delivery during COVID-19 era.

Table 4: Factors influencing the quality of healthcare service delivery during COVID-19 era

Factors influencing the quality of healthcare service delivery during COVID-19 era (According to beneficiaries)	Yes	No
Many activities related to prevention and treatment of COVID-19 for healthcare service providers	88.9%	11.1%
High prevalence of COVID-19 among healthcare service providers	77.8%	22.2%
Stress and burnout related to prevention and treatment of COVID-19 among healthcare service providers	72.2%	27.8%
COVID-19 preventive measures in health institutions	33.3%	66.7%
Changes in financial management for integration of COVID-19 related activities	22.2%	77.8%
Changes in collaboration with partners due to COVID-19 effects	16.7%	83.3%
Lockdowns in the region of health institutions	44.4%	55.6%
Prevention of some activities in the region of health institutions	27.8%	72.2%
Socio-economic effects of COVID-19 on beneficiaries of healthcare services	5.6%	94.4%

Source: Primary data

The quality of healthcare service delivery has not been affected at the same level in all health institutions. Based on the types of health institutions, findings of this research revealed that healthcare service delivery was particularly affected by lockdowns for referral hospitals,

compared to other health institutions. In fact, patients were challenged by procedures and cost of transport from their residence to the hospital, so that some of them have missed medical appointments. In contrast, These findings are almost similar to the Global Fund report according to which the inability to reach health care facilities due to disruptions in public transportation and stay-at-home orders was a prominent challenge for patients looking to access health care. According to the authors, the problem has been more relevant for urban residents (19). It's the same for this study, whereby patients and healthcare service providers in health centers confirmed that it has been always possible for patients to join health centers, despite the limitation of movements during lockdowns. However, some healthcare service providers have mentioned their transport from home to workplace as the factor which has negatively influenced the quality of delivered service. In fact, some of them were obliged to go on food the long distance, due to disruption to public transportation.

The increased workload in health sector has been mentioned as a factor which has strongly affected healthcare service delivery in public hospitals and health centers, compared to other health institutions. Actually, in addition to their ordinary responsibilities, district hospitals and health centers have seen their mission overloaded by the specific role to play in prevention and treatment of COVID-19: testing and identification of COVID-19 positive cases, management of COVID-19 isolation service established in each hospital, intervention in COVID-19 command post established in each district for COVID-19 prevention and response, COVID-19 vaccination, etc. To express this issue, one of key informants from a district hospital declared the following: *"Healthcare service providers have been requested to do many things beyond their abilities. In fact, COVID-19 has created more services. For example, there is COVID-19 isolation service in each hospital requiring around 10 persons, COVID-19 command post at the district level with 10 or more staff from health institutions, COVID-19 vaccination activities, home-based care and follow up of COVID-19 positive cases, etc. There has not been the recruitment to fill these positions. In addition, when service providers are contaminated, they are not replaced in their responsibilities. The remaining staff continues to work as usually, combining their responsibilities with those of the ill staff."*

For private health institutions, the number of received patients has also increased. Some patients joined those private facilities due to the lack of service in public institutions or negative judgment of its quality.

Socio-economic effects of COVID-19 have also affected healthcare service delivery. According to the World Bank, the COVID-19 pandemic is estimated to have pushed up to 40 million people into extreme poverty in Africa, and every month of delay in lifting containment measures is estimated to cost the continent US$ 13.8 billion in lost gross domestic product (20). Testimonies from respondents revealed that the loss of jobs, failures

in doing businesses, deaths due to COVID-19, etc. have contributed to the loss of abilities to have access to quality healthcare service. In addition, additional budgetary resources to combat COVID-19 were required, from individual to family, institutional and national levels: provision of masks, hand washing stations and materials, COVID-tests, etc.

Effects of healthcare service delivery issues experienced during COVID-19 era

Despite their testimonies of dissatisfaction with healthcare service delivery during this COVID-19 era, there are no strong effects on patients' health expressed. Respondents confirmed that healthcare service providers try to limit those effects through prioritization of urgent cases, overworking, and risking their life. However, working in these conditions affect their mental health and some of them manifest burnout symptoms at the high level. *"Currently, healthcare service providers are tired! Some of them are thinking about how they can leave this sector, in order to reduce the stress. While employees in other sectors were in their households during this COVID-19 period, it was the time of working very hard for us":* revealed one of healthcare service providers.

Even though healthcare service providers struggle to deliver the quality service, the delayed and abandonment of care seeking behaviors were mentioned by respondents as challenges experienced during this COVID-19 era. This is similar to what Global Fund has reported in the study on the impact of COVID-19 on HIV, TB and Malaria services and systems for health. Some patients delayed seeking care, while others no longer visited clinics due to changes in recommendations for mild illness and elective care (19).

Healthcare service delivery issues linked to COVID-19 have socio-economic effects on patients, their families, communities and the country.

Action strategies for improving quality of healthcare service delivery in health institutions of Rwanda during and after COVID-19 era.

In the qualitative research conducted on the drivers of improved health sector performance in Rwanda, community health activities came out as important cluster of health system factors having contributed most to better health sector performance, followed by improvements in human resources for health (21). In the same perspective, to increase the number of healthcare service providers, their motivation through the increased salary and provision of facilities like transport and accommodation were recommended by respondents. In addition, capacity building, improving occupational health in health institutions, stress management and burnout prevention programmes for health care service providers are action strategies recommended during this research. To summarize these recommendations, the increase of the budget of health sector is recommendable.

A number of healthcare service providers (16 respondents) came back on the issue horizontal motivation which has not been done for all public servants, from 2020. One of them declared

the following: "the *taken decision of stopping horizontal promotion for public servants during COVID-19 period was applied to all sectors, included those working in health sector. The reason behind this decision is that they were not working, while they were receiving their monthly salaries, as usual. Yet, for us, it has not been possible even to take ordinary leave. We should at least be promoted as usually, in order to motivate us and to express the gratitude for the great work that we are doing."*

The Service in charge of epidemics at the level of the ministry of health and health institutions should be established or strengthened, as recommended by research participants. During this COVID-19 era, COVID-19 integrated service with the model like that of HIV/AIDS, Tuberculosis and Malaria was suggested by healthcare service providers. In addition, some respondents recommended considering all patients in the same way, without prioritization of some diseases, like it was sometimes done for COVID-19 patients.

CONCLUSION

The objective of this research was to assess the level of satisfaction with healthcare service delivery during COVID-19 era, as well as to understand associated factors. Findings of research revealed that 78.6% of beneficiaries and 100% of healthcare service providers testify the change in healthcare service delivery during this COVID-19 era. The big proportion of healthcare service providers (56%) and beneficiaries (61%) ranked healthcare service delivery as good. The increased workload in health sector has been mentioned as the main factor which has strongly affected healthcare service delivery in public hospitals and health centers, while lockdowns have particularly affected healthcare service delivery for beneficiaries of referral hospitals. The lack of healthcare service or poor healthcare service due to anti-COVID measures and preoccupation of service providers by COVID-19 related activities, COVID-19 infections among healthcare service providers, abstention and detrimental self-protection in administration of some medical examinations and healthcare services and challenges in the use of mobile money pay for payment of healthcare services are identified healthcare service delivery issues during COVID-19 era.

The increased number of healthcare service providers, their motivation through the increased salary and provision of facilities like transport and accommodation were recommended by respondents. In addition, capacity building, improving occupational health in health institutions, stress management and burnout prevention programmes for health care service providers are the action strategies recommended during this research. To summarize these recommendations, the increase of the budget of health sector is recommendable.

Findings of research demonstrated key factors contributing on the inadequate quality of healthcare service delivery and effective strategies to overcome these challenges. Specific

short-term, medium-term, and long-term recommendations to strengthen health system for accessible high quality healthcare services were addressed.

COVID-19 effects on physical and mental health of health workers are reported as great challenge worldwide. For improvement of healthcare service delivery during this COVID-19 era, improving occupational health, stress management and burnout prevention programmes in health institutions are the action strategies to be strengthened. In the same perspective, the horizontal promotion which has not been done for public servants during this COVID-19 era should be exceptionally done in health sector. As recommended by key informants, staff satisfaction survey should be conducted to inspire decision making in health sector, so that turnover in health sector may be prevented.

The prevention of SARS-CoV-2 infections in health workers requires a multi-pronged integrated approach that includes occupational health and safety (OHS) measures as well as infection prevention and control. In line with its international human rights obligations and national commitments, including the Sustainable Development Goals, Rwanda Government should continue to increase its investments in the health sector to improve working conditions for healthcare workers.

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Conflicts of interest

There are no conflicts of interest.

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