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(RESEARCH ARTICLE)

Management of SARS nCoV 2 in prison settings: Lessons from Migori GK Prison, Kenya

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Abstract

Introduction: Conditions within prisons and high human traffic fuels spread of outbreaks within prisons. Security and ethical-legal dilemma complicates patient management in prisons.

Purpose: Assess treatment and isolation outcomes of patients admitted in the prison treatment units.

Methods: Cross-sectional and cohort retrospective designs were adopted. All those who tested positive were recruited. Top officials and healthcare workers seconded to prison treatment center were respectively identified for key informant interviews and focused group discussions.

Data collection: Data on treatment outcomes was abstracted from medical records while data on staff perception was collected using focused group discussions and key informant interviews.

Data analysis: Data was managed in R version R-4.0.3 and both descriptive and inferential statistics were used, summaries were presented in frequency tables and graphs.

Results: 117 patients had been admitted into the treatment unit with all being males save for one female. The average length of stay was 18 days. There was an inverse correlation between age and length of stay. (-0.1092). There was observed reduced security risks and cross-infection amongst prison wardens compared to when prisoners were being transferred to the general treatment units.

Discussion: Improved patients outcomes with reduced risks of cross-infections amongst prisoners, staffs and staffs to family members enhanced confidence of health care workers. Ethical and legal dilemmas of detaining rumandees released on cash-bail remained a key challenge.

Conclusion: Management of outbreaks within prison settings has more benefits compared to when inmate patients are transferred to general treatment centers.

Recommendation: Benefits of managing outbreaks within areas of confinement outweighs risks of otherwise. Thus we recommend management of similar cases within prisons.

Keywords: SARS nCoV 2; Prison settings; Treatment centers; Disease outbreaks and Control of disease spread

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1. Introduction

1.1. Spread of Covid 19 in Prisons

Conditions within areas of detention catalysis spread of infectious diseases. A single identified case is a potential for unprecedented spread. In mid-March 2020, the first case of novel coronavirus 2019 (COVID-19) was diagnosed at Riker's Island, the main jail complex in New York City. Within 2weeks, more than 200 cases were diagnosed within the facility, despite efforts to curb the spread. Its estimated that the Spanish influenza of 1918 affected half of the 1900 inmates during the first wave of the epidemic; sick calls increased from 150 to 700 daily. Contrary to protocol, most of the ill were kept in the general prison population because the hospital ward was full (1). This remains the greatest challenge to date in most prisons including Kenya. Prevalence of communicable diseases in prisons is generally higher than in the free population (2). Detainees are vulnerable to the spread of an infectious disease, both because they have an average level of health lower than that of the general population, and because they live forced in cramped, overcrowded, poorly ventilated environments, in which it is not always possible to observe the general hygiene rules (3).

Aims of effective control of Covid 19 in Prisons: protect the health and well-being of people detained in prisons and other closed settings, those who work there (custodial, health-care and other staff), and people who visit prisons and other places of detention (legal visitors, family and friends of prisoners, etc.), support the continued safe operation of prisons and other detention settings, reduce the risk of outbreaks which could place a considerable demand on health-care services in prisons and in the community, reduce the likelihood that COVID-19 will spread within prisons and other places of detention and from such settings into the community and ensure the needs of prisons and other detention settings are considered in national and local health and emergency planning (4).

1.2. Challenges in controlling infectious diseases within prisons

Balancing between security concerns and right to health possess a great challenge in controlling infectious diseases within the prisons (3). Because of fear of contracting the dreaded corona virus in closed, overcrowded and precariously hygienic environments, and the limitations imposed on prisoners by the Italian government, in mates rioted leading to loss of life, injuries and prison escape (3).

In the phase of the current COVID 19 pandemic, most governments and institutions of detention/reduced liberty struggle with management of infectious diseases outbreaks in such settings. Migori GK prison is such an institution which had an outbreak of COVID 19 within its premises. In collaboration with the health department, the Prisons department set up a treatment unit within Migori GK Prison. We therefore did a mixed method study (both qualitative and quantitative) with an overall goal of sharing lessons learnt from Migori GK Prison with the ministry of health with an aim of guiding in relevant policy formulation in control of infectious diseases in similar settings within Kenya and beyond. Other aims of this study included: determine the prevalence of COVID 19 within Migori GK Prison in the first three months, establish how these cases were managed and followed up and lastly to evaluate pros and cons of setting up a treatment unit in the prison.

2. Methodology

2.1. Study Design

Mixed study designs was used: both qualitative and quantitative.

2.2. Study Site

The study was conducted at Migori GK Prison. This institution has two wings: male and female. There are two health facilities within the prison premises: one within the general prison holding area which exclusively serves the inmates and one by the gate which is open to all including members of the public. Staffing for both facilities is composed of nurses (2), laboratory technologists (2), HIV Testing Service providers (4) and one Peer educator. The prison department runs a comprehensive care facility for those living with HIV/AIDS within the facility. In terms of supply for medical equipment, the facilities rely on supply from the national government through the office of the commissioner general for prisons and occasional support from the county department of health. Migori County health department set a treatment unit within the prison to help manage Covid 19 cases within the prison. Staffs who were seconded to the institution included: Clinical officers, nurses, public health officers, clinical psychologists and visiting medical officers.

2.3. Sampling method

Census sampling was used as all those who tested positive were included in the study.

2.4. Data collection

Mixed methods were used for data collection: abstraction from medical records, key informant interviews and focused group discussions.

2.5. Target population

We targeted all patients who had been admitted to the treatment site as at the time of commencement of this study together with top management of Migori GK prison and health staff seconded to the treatment unit.

2.6. Data analysis

Collected data was entered and managed in R version R-4.0.3 and both descriptive and inferential statistics were used, summaries were presented in frequency tables and graphs.

3. Results

3.1. Overview of Migori county Covid 19 response

The county department of health had county response team which was co-chaired by directors of public health and medical services. This team had three sub-committees: Treatment, logistics and surveillance. Each of these teams had specific terms of reference. County Covid 19 treatment team was mandated to take care of those who turned positive: this included evacuation of the cases to the treatment centers and care to them throughout their stay in the centers including referral for specialized care.

Migori County has two treatment centers: Macalder treatment site and Migori GK Prison. Macalder is for the general population while Prison treatment center was exclusively for prisoners and rumandees i.e. the prison treatment center received patients from both the prison and police cells across Migori County.

Management of positive cases was done as either home based isolation, hospital based (macalder) or Prison for the inmates.

3.2. County Covid 19 status as at 30th September 2020

The surveillance team had screened a total 3,889,955 with 8299 tests done leading to identification of 488 (5.9) cases identified. The total number ever admitted at the treatment centers were 398 with 206 (52.03) in Macalder, 119 (29.9) in prison and 73 (18.3) admitted in home based isolation. The rest 80 (20) were other nationals who were not allowed entry into the Kenyan territory and instead were handed back to the port health authorities at the border point.

Table 1 Case distribution

Macalder treatment site	206
Migori GK Prison treatment center	119
Home Based Isolation Care	73
Total	398

3.3. Case distribution by age in Prison treatment site

Total positive cases were 117 with 116 (males) being admitted at the prison and one (female) being admitted at the Macalder main treatment site.

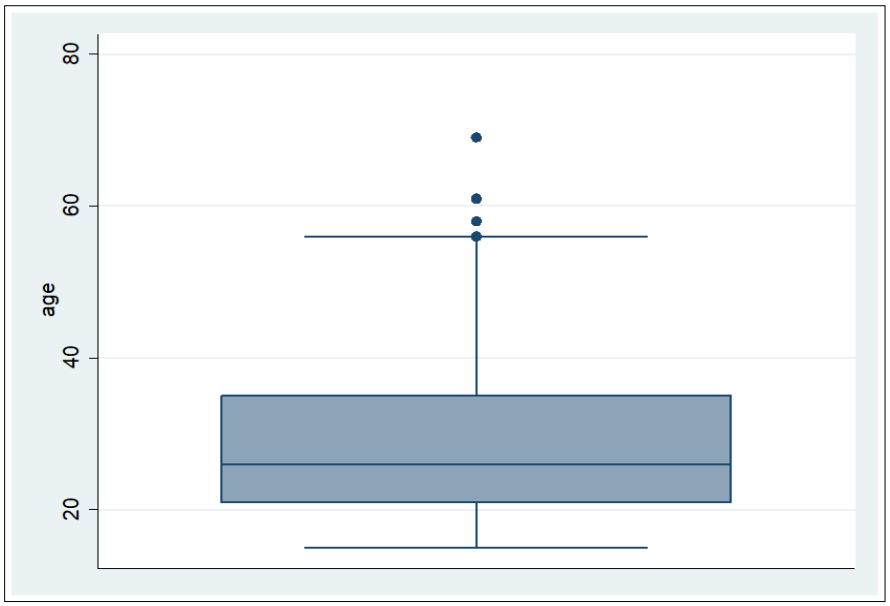

Figure 1 Case distribution among inmate by sex

3.4. Length of stay within the treatment center

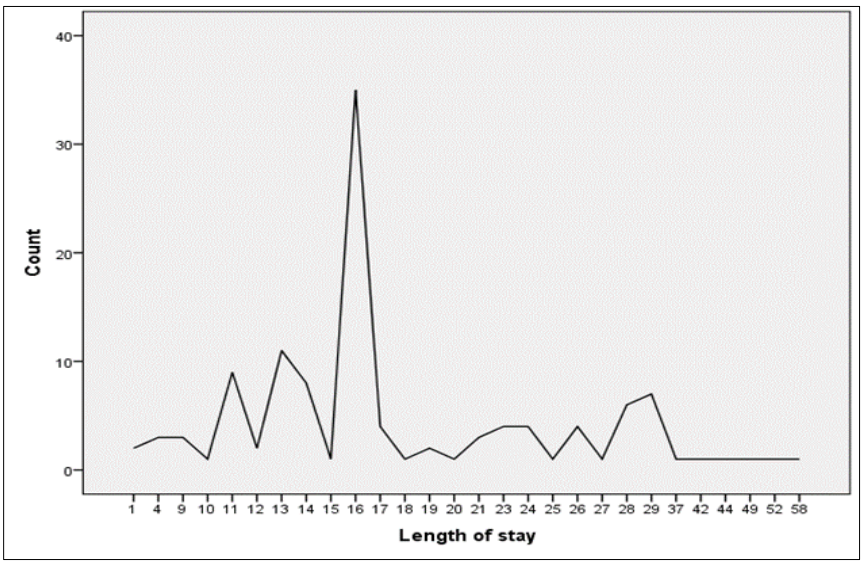

Figure 2 Case distribution among inmate by sex

Table 2 Mean of Age and Length of Stay

	Mean (N=119)
Age	29.35294
Length of Stay	18.55462

Table 3 Correlation between Age and Length of Stay

Correlation between Age and Length of stay (N=119)	
Cor	-0.1092

There was observed inverse correlation between age and length of stay. (-0.1092)

Table 4 Characterization of cases by symptomatology

Symptoms	Frequency	Percentage	Cum.
Symptomatic	2	98.32	98.32
Asymptomatic	117	1.68	100
Total	119	100	

3.5. Nutritional support and diet time table at the prison

These patients' had highly concentrated ginger and lemon water pre-breakfast (8; 30am) with the rest of the meals following routine sequence. Additionally they had oranges in the afternoon.

3.6. Follow ups of patients in prison treatment sites

We admitted 39 patients on day one of commissioning of the center. These were observed daily for respiratory symptoms including for changes in temperature and any other Covid 19 defining symptom. On the 10^{th} day, samples for PCR was collected and 22 (56.41) were negative with 17 (43.58) turning positive. To decongest the treatment unit, The 22 who tested negative were discharged to a separate quarantine facility and retested on day seven. This follow-up test was negative. Discharge on single repeat test was done due to increasing demand for space until a directive was issued that it's safe to do so. Then it became a routine.

3.7. Results from Focused Group discussions and Key Informant Interviews

3.7.1. Setting up of Covid 19 treatment site within the prison premises

The isolation center was intended for management of asymptomatic and mild COVID-19 cases and has capacity of up to 60 patients. Both severely and critically ill patients were to be managed at the county treatment center or referral hospital respectively. The cells were improvised and used to cohort the patients. Three sets of treatment teams were seconded to the treatment center by county government of Migori: nurses, clinical officers, public health officers, laboratory technologists and visiting medical officers/specialists. The teams worked in shifts and were accommodated in a designated staff house with in-house catering for the entire duration of their shifts. The staffs who had completed their shifts were quarantined in a designated hotel at the cost of the county government.

Various WASH equipment were also supplied to the prison together with support towards disinfection/fumigation of the prison.

Key Informant Interviews (Prison management and staff)

These prison personnel opined that setting of the treatment center within the prison was quite beneficial in many ways:

- No attempted escapees as previously witnessed in the main treatment centers.
- Zero reported cross-infection to prison wardens and police officers
- Ensured zero infection within the main prison. This was achieved within 21 days with the rest of the cases emerging from police cells.
- Easy management and allocation of duties as opposed to having a high number of police officers/wardens being sent to main treatment site.
- Reduced congestion of the main treatment center by police officers hence reduced risk of infection. Previously each police station would be required to have separate officers for their rumandees.
- Improved general sanitation and screening.
- The biggest challenge reported was how to handle female inmates whose site had been converted to a treatment center. Increased resources was required to transport new offenders to the nearest female prison.

Key Informant interviews (Healthcare workers):

Healthcare workers attached to prison opined that it was relatively convenient to manage these patients from prison treatment site compared to having them in the main treatment center. Further it was reported that the level of patient-healthcare worker relationship was improved with enhanced cooperation by the patients.

The main challenges experienced when managing COVID-19 within the prison set up include:

- Poor adherence towards IPC measures due to misconceptions about COVID-19.
- Mistrust between healthcare workers and wardens: assumption that the healthcare workers have additional benefits while working in the prison setting.
- Lack of flexibility of stringent pre-existing prison rules and regulations in the face of the pandemic. For example, no patient could be admitted past 5:00pm or weekends from the police cells.
- Poor pre-existing IPC structures within the prison establishment.
- Challenges in dealing with some isolated cases within the prison such as female, minors, psychiatric Covid 19 cases.
- Fear among the prison wardens over hosting a treatment center within the prison and in proximity to their residential area was also experienced.
- Dilemma on how to deal with a suspect who has been released on cash-bail before completing the required quarantine duration.

Both [1]KII and [2]KII strongly recommend for management of Covid 19 and any future outbreaks within prison settings and further implores the department of prisons to have similar establishments within selected prisons if not all across the country.

4. Discussion

High risk of cross-infection amongst staffs and staff to inmates was noted on the initial days of the pandemic within the police cells and prisons. This was consistent with a study in the United States that found that SARS-CoV-2 infection is more likely among staff working in institutions where physical distancing and limiting exposure to a consistent set of staff and inmates are challenging (5). With enhanced surveillance and adequate IPC measures, we noted reduced risk of infection amongst staffs and inmates who tested positive. On day one of commissioning the center, 39 patients were isolated with 22 (56.41) testing negative on day 10 with 17(43.58) testing positive on PCR. Strict admission was ensured into the prison areas with testing at entry and quarantine before receipt of results. This measure ensured zero infection within the main prison within one month. This multiagency approach in mitigation of Covid 19 led to reduction of cases within this setting (6).

As much as cross-infection within the main prison had been controlled, average length of stay was 18.55days. This was due to high admission rates from the various police cells with limited quarantine space within the treatment centers. Limited access to PCR catalyzed prolonged stay. In a cross-sectional review of Hospitalizations for COVID-19 among US People Experiencing incarceration or Homelessness by Montgomery et al, they found a prolonged length of stay of 8-10 days with high risk of readmission which was near-similar to our findings (7).

5. Conclusion

Management of outbreaks within prison settings has more benefits compared to when inmate patients are transferred to general treatment centers.

Recommendation

We strongly recommend establishment of treatment centers within prison settings and similar areas to manage disease outbreaks to manage future outbreaks.

Compliance with ethical standards

Acknowledgments

The authors sincerely appreciate the office of county director of medical services and the authorities of Kenya prisons for permitting this work as it will contribute in management of future outbreaks in such settings.

Disclosure of conflict of interest

The authors have no conflict of interest as this work is purely for health promotion purposes.

Statement of informed consent

Where both prison and healthcare staffs were interviewed, due diligence was ensured to get consent from relevant authorities of the respective departments.

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