



A scope review on home-based care practices for COVID-19: What Nigeria can learn from other countries

Olayinka S. Ilesanmi^{1,2}, Aanuoluwapo A. Afolabi¹

¹Department of Community Medicine, College of Medicine, University of Ibadan, Oyo State, Nigeria

²Department of Community Medicine, University College Hospital, Ibadan, Oyo State, Nigeria

Abstract

Introduction: Home-based care (HBC) services associated with COVID-19 pandemic are inevitable due to rising number of cases, the need for patients to self-isolate and curb the spread of infection. We reviewed the practices of HBC for COVID-19, identified possible challenges and suggested solutions for its optimization in Nigeria.

Methods: We adopted the scope review methodology. We conducted an extensive search of published articles on three databases; MedLine, PubMed, and PLOS ONE focusing on home management for COVID-19 and screened them for eligibility.

Results: Our findings revealed HBC decongests health facilities, makes room for health workers to focus on critically ill patients, and enhances recuperation of ill persons at a low cost. However, when self-isolation and infection prevention and control are not strictly adhered to, HBC increases the risk of transmission of COVID-19 among family members and further community transmission. Similarly, the existence of the perception of 'imprisonment' and difficulty in adherence to safety measures could be key challenges to optimizing HBC.

Conclusion: Strict infection prevention and control (IPC) measures could reduce the transmission of COVID-19 during HBC. We recommend HBC training sessions, and IPC education for community members regarding home care of COVID-19 patients. Patients who are less likely to adhere to HBC should be isolated in health facilities where available. Organized trainings need to be scheduled for community-based volunteer healthcare workers to undertake visitations to household where COVID-19-infected persons are being isolated. A periodic review of HBC is needed to identify its challenges and proffer prompt solutions.

Keywords: COVID-19; home-based care; household; infection prevention and control; self-isolation; Nigeria.

Introduction

The novel Coronavirus disease (COVID-19) is a respiratory illness different from other severe acute respiratory illnesses.¹ The disease has rapidly introduced remarkable changes in the health sector due to its mechanism of spread, rapid increase of cases accompanied by economic meltdown as a result of the total and partial lockdown implemented

in various countries to curb the spread.^{1,2} This necessitated modifications in the existing operations globally. The provision of isolation centers in the management of COVID-19 cases and complications has proved to be inadequate in recent times. This is because these centers are reaching their limits in housing and caring for persons due to limited health facilities, providing care and housing persons as well as limited staff.^{1,2} Hence, the exploration of other containment and control modalities for COVID-19 such as Home-based care (HBC).

Globally, the Coronavirus pandemic has been rapidly transmitted across 213 countries with nearly

Corresponding Author: Dr Olayinka Stephen Ilesanmi

Department of Community Medicine,
College of Medicine,
University of Ibadan, Oyo State, Nigeria.
E-mail: ileolasteve@yahoo.co.uk

Table 1: Studies on Home-based care showing the list of authors, study population, and key findings

S/N	Author	Source Origin	Aims	Study Population	Method/Type of Article	Concept/Outcome of interest	Key findings
1.	Borhaninejad and Rashedi, 2020 ¹⁰	Not Applicable	Impacts of home care on older adults during the COVID-19 pandemic	Geriatric population	Letter-to-the-editor	A paradigm-shift to maximization of function among older adults in the COVID-19 pandemic period	(i)Home-based isolation among older adults reduce the risk of infection with COVID-19 among these high-risk individuals (ii)Home care must be tailored to meet individual needs and must meet evidence-based specifications.
2.	Li et al., 2020 ¹¹	China	Analysis and demonstration of epidemiological and non-characteristics of household transmission of COVID-19	Household members of hospitalized and non-hospitalized COVID-19 patients	Retrospective/ Full research	Household transmission of COVID-19	(i)Spousal relationship increases the risk for transmission among COVID-19-positive persons and household members (ii)The household is a fixed source of COVID-19 transmission
3.	Medina et al., 2020 ¹²	United States	Home-based tele-monitoring of COVID-19 patients at risk of poor outcomes	COVID-19 patients at risk of poor outcomes	Retrospective cohort/ Full research	Reduction of the risk of exposure to COVID-19 through home monitoring	(i)Mobile platforms of communication help health workers focus on patients requiring face-to-face contacts (ii)HBC maximizes patient satisfaction and engagement
4.	Wang et al., 2020 ¹³	Beijing, China	Household prevention and control of COVID-19	Family members of confirmed COVID-19 patients	Retrospective cohort/ Full research	Secondary transmission of COVID-19 in the household	(i)Infection prevention and control (IPC) measures could prevent household COVID-19 transmission even in crowded or small households (ii)Transmission is likely to occur among asymptomatic COVID-19 positive persons (iii)Hand hygiene alone offers less protection against COVID-19 compare to hand hygiene and wearing of face masks (iv)Disinfection and household ventilation are effective in protecting from transmission
5.	Wang et al., 2020 ¹⁴	China	Determination of transmission rates of COVID-19 among household members	Hospitalized COVID-19-positive persons	Retrospective case series/ Full research	Transmission rates among close contacts of COVID-19-positive persons	(i)Higher transmission rates of COVID-19 exist among family members especially areas with large number of household members. (ii)Home caring reduces stigmatization of COVID-19 patients

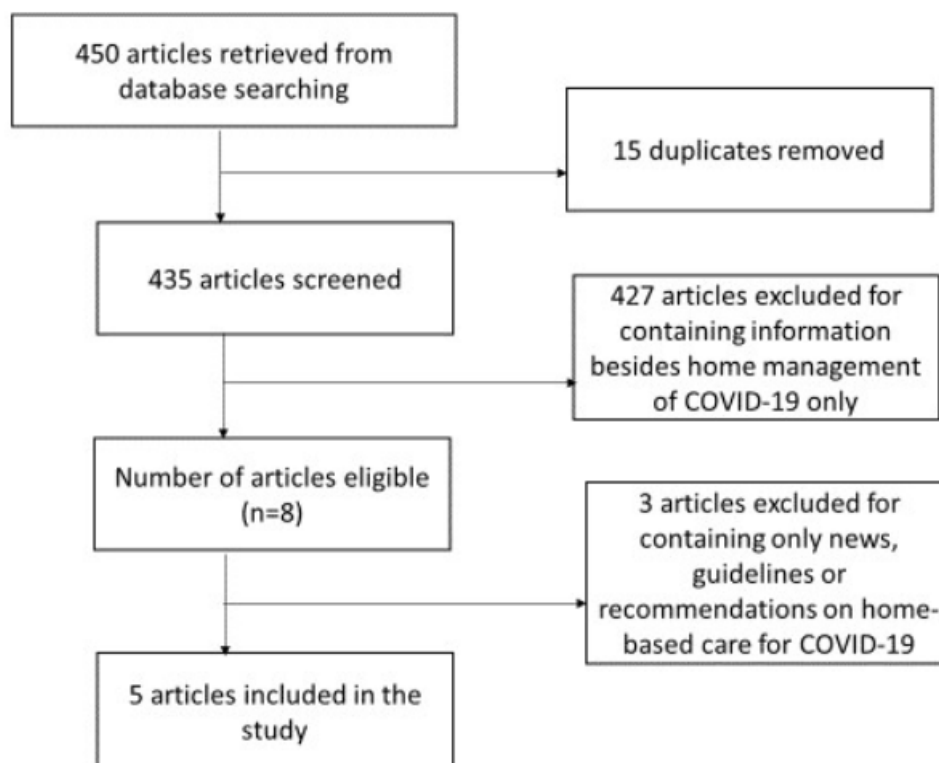


Figure 1: Flowchart showing the review process

31 million confirmed cases and 978284 deaths as of 24th September, 2020.³ Fifty-five African countries have recorded confirmed cases of COVID-19 totaling 1,429,911 cases and 34,529 deaths.³ In Nigeria, daily increase in COVID-19 cases are being recorded. As of 24th September, 2020, 57,724 COVID-19 cases and 1,102 fatalities have been recorded in Nigeria.³ Lagos State is the epicenter of COVID-19 in Nigeria, and constitutes over a half of COVID-19 cases in the country. Thus far, Lagos is the only state in Nigeria where measures for home-based management of asymptomatic and mild COVID-19 cases has commenced.² This occurred due to the increased number of positive cases in the state and the possible shortage of bed spaces in isolation centers, thereby necessitating HBC for patients with mild symptoms or those without symptoms.² This reality in other parts of the country cannot be ruled out due to the increasing number of cases nationwide which further enhances the need for HBC strategies nationwide.

HBC has been defined by the World Health Organization (WHO) as any form of help rendered directly to a sick person at home by family and community members at the same time receiving professional advice and support from trained health

workers.⁴ It serves as a substitute to treat patients from the comfort of their homes in line with the health workers recommendations.⁴ This strategy could be used only if the patient has mild symptoms or is asymptomatic with no underlining health conditions or complications. Such settings have the advantage of providing the spiritual, physical, and emotional needs of patients.⁴ Continuous exposure of patients, relatives, and healthcare workers (HCWs) to overcrowding is a risk factor for the transmission of COVID-19.⁵ Also, facility-based management seems incompletely adapted to the novelty of COVID-19, especially as it favors its transmission. Hence, HBC should be optimized for the enhancement of health and the assurance of the continuum of healthcare delivery during the COVID-19 pandemic.

To the best of our knowledge, there is no available literature on the knowledge, attitudes, and practices of HBC regarding the management of COVID-19 in sub-Saharan Africa. Evidence from literatures on HBC is required for the maximization of its benefits, the identification of the challenges it presents, and the charting of adaptive strategies in the Nigerian context. Therefore, the aim of the study was to conduct a scope review of HBC for the management

of COVID-19, drawing on lessons learnt from other countries for the Nigerian context.

Methods

Study design

The scope review methodological framework was used to conduct this study. This framework was developed by Arksey and O'Malley and modified by several studies.^{6,7,8} Scope review consists of six steps: a clearly defined research question; identification of relevant studies using electronic databases, reference lists, hand searches, and gray literature; study of the selection process (post hoc, or modified, inclusion and exclusion criteria as new ideas are identified during the process of gathering and reviewing information); charting the data extraction process; collating, summarizing, and reporting the results; and consultation exercise (optional).⁹ This type of review is relevant in identifying available evidence in a field for clarification of key concepts, examining how a research is conducted on a certain topic; identifying key factors associated with a concept; identifying and analyzing knowledge gaps; and can serve as a precursor for performing a systemic review.⁶ Scope review is suitable for topics that involve the novel Coronavirus as a lot of issues are yet to be clarified regarding the virus and its case management. Scope review of HBC in the management of COVID-19 analyses the opportunities for exploring home management of COVID patients with the aim of health improvement.

Procedure for Literature Search

We searched for articles on the HBC management of COVID-19 on three databases. A purposive selection of three databases (MedLine, PubMed, and PLOS ONE) was done due to their indexing on a wide range of journals. Studies that focused on health care providers and caregivers (family/friends) who were involved in home care management of COVID-19 were included in this review. We also included studies which focused on individuals receiving homecare management of COVID-19. All articles which have been published in English Language were included in the study for ease of understanding by the reviewers. Articles published earlier than 2019 were excluded because they were not specifically tailored to the COVID-19 pandemic. Both authors served as reviewers in the

data extraction from the databases. We adopted a three-step method in our search strategy.⁸

Step One: A search of Medline, PubMed, and PLOS ONE databases were used for index terms and text words contained in the title and abstract.

Step Two: Identified keywords and index terms were used to prompt search on included databases.

Step Three: The reference lists obtained from the articles were searched for additional literatures.

We undertook a structured search of literatures using the following search strategy. Keywords were used in the search strategy with the use of Boolean operator 'AND'. The keywords included: "HBC AND COVID-19" OR "Community-based care AND COVID-19" OR "Home care AND Coronavirus" OR "HBC AND SARS-Cov-2" OR "Home monitoring AND COVID-19" OR "Home-based management AND COVID-19". A total of 450 articles which have all been published in English language were retrieved through database searching, followed by the removal of 15 duplicates. Figure 1 shows the flow chart for the scope review process. A total of 435 articles remaining were screened, with 427 articles excluded for containing other information besides home management of COVID-19. A total number of 8 articles were eligible for the study. Three articles containing only news, guidelines, or recommendations on HBC of COVID-19 were excluded, and 5 articles were included in the study.

Results

Table 1 shows a list of reviewed literatures showing the preliminary details, study population, and key findings. From the review process, we identified three broad themes relating to HBC. These included the advantages, challenges, and strategies for optimizing HBC. Regarding the benefits of HBC, three studies identified that HBC is associated with reduced risk of stigmatization for COVID-19 and maximizes patient satisfaction and a higher likelihood of recovery. These literatures also reported a reduced risk for COVID-19 infection among older adults, a group with high vulnerability to COVID-19.

We found that a higher likelihood of familial transmission of COVID-19 is associated with HBC of COVID-19 positives. Three literatures identified the household as a fixed source of COVID-19 transmission, with the existence of increased risk

among persons in spousal relationship with COVID-19 positive persons. Households with large number of members are also more likely to experience higher COVID-19 transmission rates than others. Asymptomatic COVID-19 positives are also likely to transmit the infection on to uninfected persons.

Our findings revealed the opportunities for the optimization of HBC for COVID-19 positive persons. Compliance to IPC measures was described as an opportunity for the prevention of household transmission of COVID-19 in all household types. Adherence to the practice of hand hygiene was recognized to offer less protection against COVID-19 compared to a combination of hand hygiene and wearing of face masks. Also, disinfection and household ventilation are effective in protecting from COVID-19 transmission. Mobile platforms of communication help health workers focus on patients who require face-to-face contacts, and improve the chances of HBC. Optimization of HBC requires that it meets evidence-based specifications which must be tailored to meet the needs of individuals.

Discussion

A sharp but steady rise in COVID-19 infection rates and associated fatalities is being documented in Nigeria, and this has placed great burdens on the health system.² Guidance for home care of mildly symptomatic COVID-19 patients and their contacts have been released by the World Health Organization.¹⁵ Main measures stated in the guidance include the assessment of the feasibility of care provision in a residential setting by an assigned HCW, and education on hygiene and infection prevention and control (IPC) measures for suspected COVID-19 cases and family members.¹⁵ These include education on adequate ventilation, use of masks, and hygienic practices. The provision of ongoing support and monitoring throughout the entire period of home care management of COVID-19 cases has also been included in the guidelines for managing COVID-19 patients in residential environments.¹⁵

Advantages of HBC in the management of COVID-19

Findings from the reviewed studies revealed that

HBC of COVID-19 serves to decongest health facilities. It also makes room for health workers to focus on critically ill persons who require face-to-face examination by skilled health personnel. HBC for COVID-19 would create the opportunity for emotional care and support needed for recuperation especially in hot-spot communities. Active engagement of infected persons and relatives or caregivers would be enhanced following the adoption of HBC of COVID-19 patients. A study conducted on the effectiveness of follow-up visitations for home-based end-of-life care reported an improvement in patient's satisfaction.¹⁶ In addition, the existence of housing patterns which encourage caring and showing concerns for household and community members in Nigeria could provide a form of psychotherapy for the ill. Home caring could thus serve to enhance recuperation among COVID-19-positive persons. Results of this review revealed that HBC of COVID-19 patients could reduce stigmatization associated with diagnosis of the infection. A study on antiretroviral therapy for HIV-positive persons concluded that HBC has the potential for reducing stigmatization, improving access to care and support, and enhancing uptake of testing.¹⁷ While providing an opportunity for providing care and support for the ill individual with ease, HBC in Ebola management helped to overcome the difficulties of transporting the Ebola-positive persons to and from the health facility.¹⁸ Findings from another study not included in this review reported that home care among HIV patients enhanced compliance to medications.¹⁹ These evidences highlight the immense benefits which could be harnessed if HBC is adopted in the management of COVID-19 in Nigeria.

Challenges of HBC adoption for the management of COVID-19

Findings from this review identified that the risk of familial transmission of COVID-19 could pose a challenge to the adoption of HBC. Evidence from studies presently reviewed revealed that an average number of 5 persons live in every Chinese household, and this is similar to the range of household members in Nigeria.²⁰ We found that the household is a primary site which enhances the spread of COVID-19, especially with an increased

risk among spouses. COVID-19 is a droplet infection capable of being transmitted in overcrowded areas. Households with many members may not be able to benefit optimally from HBC of COVID-19 infection because of the large number of residents. This is because isolation might not be possible especially in low-income areas or ghettos where the available limited rooms are always overcrowded. Unfortunately, many ghettos can be found in the present-day Nigeria. Also, only about a half of Nigerian households have access to improved sanitation facilities including facilities shared with other households, while a third lack access to portable water supply.²⁰ HBC may be faced with the challenge of actualization in Nigeria due to the pattern of housing in many communities.²⁰

Also, the lack of sanitary products such as disinfectants, detergents, and hand sanitizers in many homes may be challenging to the implementation of HBC for COVID-19 in the Nigerian context.²⁰ The lack of these necessities would prevent the maintenance of hygienic conditions in homes where COVID-19 patients are to be managed. Management of COVID-19 patients in unhygienic conditions could place caregivers and other family members at risk of COVID-19 infection. Reports from the 2018 Nigeria Demographic Health Survey revealed that many individuals lack knowledge of proper handwashing.²⁰ The existing lack of knowledge of proper handwashing practices could increasingly place other persons within the home at risk of COVID-19 infection if COVID-19 patients are managed in their homes. These factors could impede the adoption of home-based management of COVID-19 patients.

In addition, a sense of 'imprisonment' may exist with home caring of COVID-19-positive persons due to the inability to maintain physical relationships right within their own homes. HBC of COVID-19 could result in the escalation of existing health issues to depression and other illnesses. It is worth knowing that home caring could place financial constraints on both COVID-19-positive persons and caregivers alike. Difficulty in adherence to the constant practice of outlined preventive measures may serve as a notable challenge to harnessing the benefits which HBC presents. Such challenge in adherence has also been

reported by similar studies on HIV.²¹

Moreover, the financial implications required for HBC of COVID-19 could hinder its adoption. Compared to isolation centers where costs are borne by the government, the responsibility for HBC is likely to be shouldered by COVID-19-positive persons and their families. Hence, HBC of COVID-19 may not be affordable to families with a lot of unemployed persons or those surviving on menial jobs. This may result to increased costs on households compared to a reduction in costs with HBC obtained from findings on HIV and tuberculosis.^{16,21,22,23,24} The increased cost associated with HBC could make the strategy almost impossible for adoption in many households in Nigeria.

Improvement strategies for HBC in the management of COVID-19

Improvement strategies for COVID-19 management in a home-based setting as identified by the findings in this review include infection prevention and control measures. These include improved education on practices such as hand hygiene, wearing of face masks, social distancing, disinfection, and household ventilation which curtail transmission. Similar measures such as hand hygiene, disinfection and wearing of personal protective equipment have been recommended in the risk reduction against the transmission of Middle East Respiratory Syndrome.²⁵ We also found out that the wearing of face masks and observation of hand hygiene affords more protection against the transmission of COVID-19 than hand hygiene only. This explains the need for adoption of IPC measures in HBC management of COVID-19 patients.

In order to adapt HBC to the management of COVID-19 in Nigeria, the review identified the need for tailoring caring practices to individual needs. This helps to provide patient-centered care to cases of COVID-19. Based on individual peculiarities, housing patterns, age, and other socio-demographic characteristics of interest, a sampling of COVID-19-positive persons across the country's urban and rural areas needs to be done. This could serve to provide adequate care which are fit for housing patients in such settings in line with recommendations of the World Health Organization. Community engagement and

participation could play a vital role in the COVID-19 response as obtained in the Ebola epidemic.^{18,26,27,28} The enhancement of innovations on healthcare delivery could enhance the race towards the control and containment of the novel Coronavirus in Nigeria as learnt from the Ebola outbreak.²⁹

Contributions of the different levels of health care could be adopted in the enhancement of HBC in Nigeria. These levels of healthcare would include the primary health centers at the grassroots level, general hospitals at the municipal or secondary health care level, and tertiary health facilities at the national level. Active involvement of health care professionals such as doctors, nurses, and midwives, as well as community health extension workers and traditional birth attendants would enhance the practice of IPC measures in community settings. The involvement of community pharmacists would also promote the workability of HBC in COVID-19 management in Nigerian communities. Multisectoral collaboration could foster sufficient awareness and knowledge regarding IPC measures for HBC in the management of COVID-19 in Nigeria.

Study Limitations

As at the time this review was done, the authors could not access any literature on HBC management of COVID-19 positive persons in Nigeria or sub-Saharan Africa. The findings obtained could have been limited by the absence of manuscript published in Nigeria on HBC. The inclusion of only articles published in English could also be a limitation of this review article.

Conclusion

In conclusion, the HBC strategy presents a promising opportunity for the management of COVID-19 in Nigerian households. However, the strategy requires supervision and monitoring by skilled health professionals. Although faced with challenges of increased transmission rates and financial constraints, home caring could afford many opportunities to COVID-19 management. HBC should therefore be incorporated into decision-making on the containment and control of the COVID-19 pandemic in Nigeria.

Recommendations and Policy Implications

We hereby recommend the following: Strict adherence of all household members and caregivers should be ensured in accordance with the WHO-recommended guidelines for Home care of COVID-19. Regular IPC education sessions should be appropriated by trained HCWs to family members of infected persons. Owing to the dearth of HCWs, organized trainings need to be scheduled for community-based volunteer HCWs to undertake visitations to household where COVID-19-infected persons are being isolated. A periodic review of HBC should be done to identify its challenges and proffer prompt solutions. Consideration of HBC of COVID-19 by policymakers is needed to enhance the involvement of health care workers in home care of patients. Overall inclusion of all patients, relatives, health care workers, and parastatals would enhance service delivery needed in the optimization of HBC management of COVID-19 patients in sub-Saharan Africa.

Authors' Contributions

OIS and AAA contributed equally to the review process and drafting of the manuscript. Both authors approved the final version of the manuscript.

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