

Effect of Implementation of Community – Based Surveillance Initiative Approach in Algableen Locality - White Nile States Sudan, 2020: Cross-Sectional Study

Abdalla Mohammed Abdalla^{1*}, Alaa Hamed Dafalla Idreis¹, Daffalla Alam Elhuda¹, Ismail Ali Yousif², Ezeldin Gomaa Gibrell Abd Algawie²

¹Republic of Sudan Federal Ministry of Health

²Republic of Sudan Whit Nile State Ministry of Health -Algableen Locality

*Corresponding author

Abdalla Mohammed Abdalla, Republic of Sudan Federal Ministry of Health, Sudan.

Submitted: 29 Oct 2022; Accepted: 09 Nov 2022; Published: 27 Feb 2023

Citation: Abdalla, A. M., Idreis, A. H. D., Elhuda, D. A., Yousif, I. A., Abd Algawie, E. G. G. (2023). Effect of Implementation of Community – Based Surveillance Initiative Approach in Algableen Locality - White Nile States Sudan, 2020: Cross-Sectional Study. *Int J Alzheimers Dis Res*, 1(1), 02-06.

Abstract

Background: Surveillance system of infectious diseases and event is recognized as the cornerstone of public health decision-making and practice additionally the International Health Regulation requested countries to implement other type of surveillance to support the routine surveillance system and to increase the detection rate and sensitivity in reporting the diseases, event, or any public health emergency with international concern (PHEIC). The aim of this study was to assess the implementation level of community-based surveillance systems to ensuring that the system implemented efficiently and effectively.

Methods: This was descriptive cross-sectional community-based study was conducted in Algableen locality White Nile states –from 2017 to 2020 involved 40 community volunteers to identify the effect of community – based surveillance in locality as initiative approach, Data was collected by using a per-prepared and pretested questionnaire followed WHO/EMRO tools for community volunteers at villages level felt through phone calls. Data were analyzed by using Statistical Packages for Social Sciences (SPSS) (version 20). Written and verbal consents were obtained from all participants as appropriate.

Results: Community based surveillance started in 2016 endorsement and approval of guidelines Standard Operation Procedures (SOPs) and training materials has been developed in 2017, there were significant positive changes in implementation of this system the system was implemented in 17 states with percentage 94.4%, the evidence for this is the result revealed availability of guidelines and SOPs was 94.1% and 88.2%, completeness, and timeliness of system data was 94.1% the system database and shared the system finding with partners at state level were 70.6%. At community level the result revealed that the community volunteers had clear contribution in reporting the cases and event this support the indicator-based surveillance and increased the system sensitivity in the study area, 35% of them the report syndromic diseases, disaster, and animals' deaths, 57% of them they report syndromic diseases and disaster, related to that, the result revealed 97% of them they had the reporting format available and 75% reporting signal to locality level regularly. From the analysis of biological events the volunteer had report 54% of signal as diarrheal diseases and 81% of signal reported as flood from the natural events, also they are reported the increases of Mosquito in the study area.

Conclusion: The study revealed significant positive impact when implementation of community-based surveillance system this system it helps in reflection of the epidemiological situation in the villages and locality, based on these finding the study recommended that, rapid and early response for the reported cases and rumors or any other event from the locality and state level reported by community volunteers, Regular refresh and basic training for community volunteers and secure the communication facilities and running cost.

Keywords: Community-Based Surveillance, Event-Based Surveillance, Indicator-Based Surveillance, International Health Regulation

Introduction

The International Health Regulations were adopted by the health Assembly in 1969, having been preceded by the International Sanitary Regulations adopted by the Fourth World Health Assembly in 1951. The 1969 Regulations, which initially covered

six “quarantinable diseases” were amended in 1973 and 1981, primarily to reduce the number of covered diseases from six to three yellow fever, plague, and cholera and to mark the global eradication of smallpox [1].

Implementing the IHR is an obligation for WHO and States Parties to the Regulations. One group of such obligations is related to the core capacity requirement for countries to “detect, assess, notify and report events in accordance with the regulations” and to “respond promptly and effectively to public health risks and public health emergencies of international concern” (PHEIC); there are also obligations concerning designated ports and airports, in relation to routine prevention and control measures and response to events that may constitute a PHEIC [2].

Community-based surveillance (CBS): While it may be defined differently in different countries (e.g., community health surveillance, community event-based surveillance), community-based surveillance is the systematic detection and reporting of events of public health significance within a community, by community members. Community health volunteers, the public, religious leaders, civil society members, teachers, and similar groups are engaged and trained to detect and immediately report unusual health events or health risks occurring in their communities [3].

Indicator-based surveillance (IBS): Defined by WHO as the systematic (regular) collection, monitoring, analysis, and interpretation of structured data, i.e., of indicators produced by several well-identified, mostly health based, formal sources [4].

Event-based surveillance (EBS) and indicator-based surveillance (IBS) are components of EWAR and epidemic intelligence. Indicator-based surveillance consists of the routine collection of data from mainly health-based sources and is the conventional form of surveillance in many countries. Event-based surveillance is not meant to replace other forms of surveillance, including IBS. Both IBS and EBS are complementary with each having a different role to play and purpose. Event-based surveillance is likely to be better at picking up small outbreaks early, while IBS is better suited for monitoring disease trends over time and is useful for signaling the start of regular seasonal outbreaks of endemic disease. Designating a seasonal alert threshold in an IBS disease monitoring system essentially creates the opportunity to detect a “signal” IBS may not be very useful for smaller events because signals are either averaged out in large data sets or lost in the noise of smaller data sets. Event-based surveillance is also better at picking up signals indicating outbreaks in areas where access to healthcare is limited. This Framework for Event-based Surveillance will focus on how various types of EBS can be im-

plemented and integrated into national surveillance systems [5]. Community-based Surveillance (CBS) is an active process of community participation in detecting, reporting, responding to and monitoring health events in the community. The scope of CBS is limited to systematic on-going collection of data on events and diseases using simplified case definitions and forms and reporting to health facilities for verification, investigation, collation, analysis, and response as necessary. CBS should be a routine function for: the pre-epidemic period to provide early warning or alerts; the period during epidemic to actively detect and respond to cases and deaths; and the post-epidemic period to monitor progress with disease control activities [6].

Materials and Methods

A descriptive cross-sectional community-based study was conducted it was focused on information related to community volunteers and their role in reporting diseases and events. Data was collected by using a pre-prepared and pretested questionnaire followed WHO/EMRO tools and it was followed through phone calls.

It involved 40 volunteers (total coverage) at village level for the— in Algbaleen locality, the total population of this locality are (177414) it located at the south part of the state this locality hosts the majority of South Sudan refugee the total refugee’s population around (18897) with many villages closed to the refugee’s camp as host communities, many returnees coming back from South Sudan after separation, this locality is in the border with South Sudan country in Goda check point.

Data Analysis

Data were analyzed by using Statistical Packages for Social Sciences (SPSS) (version 20), Percentages were used to describe the data where appropriate. Data was presented using frequency tables.

Results

The community-based surveillance started early in 2017 White Nile was the one of two states for the system piloting, the volunteer’s general information indicates that 60% of their age between 20 to 30 years old, 65% were male, 50% of them had secondary education level, 77.5% of them they were community volunteers from villages level and 60% of them they work in the community-based surveillance for more than 2 years.

Socio-Demographic variables	Frequency (N=40)	Percentage
Gender		
Male	26	65
Female	14	35
Age Group		
20-30	24	60
31-40	10	25
31-50	5	12
>50	1	2
Education level		
Illiterate	2	5

Primary	11	27.5
Secondary	20	50
University	7	17.5
classification of volunteer's		
Volunteer	31	77.5
Health community workers	3	7.5
Health Facilities staff	6	15

For reporting disease and events, the result revealed the community volunteer in the village level knows what to report through the system, the results revealed 35% of them they reported disaster, disease, and animals' deaths, while 57.5% of them they reported disaster and disease.

	Frequency	Percent
Disasters	1	2.5
Diseases	1	2.5
Animal deaths	1	2.5
All mentioned	14	35.0
1&2	23	57.5
Total	40	100.0

The last signal reported by community volunteer White Nile state -Algbaleen locality The result revealed that the last signal reported from the community volunteers were 32.5% reported disease 32.5% reported signals as natural disaster and 10% reported vectors spread, the reporting form were available (97.5)

	Frequency	Percent
Disease	13	32.5
Natural Disaster	13	32.5
Vectors spread	4	10.0
Not applicable	10	25.0
Total	40	100.0

In 2020 the community volunteers report many disease and event it reflected in the below table , 93.7% of this reports and cases reported with 24 hours, the volunteers could able to define the number of cases and deaths for diseases.

Type of report	Number of cases	Number of deaths	Report time
Diarrheal diseases	25	0	24 hours (on time)
Acute Watery Diarrheal	3500	3	24 hours (on time)
Severe respiratory syndrome	65	0	24 hours (on time)
Skin disease in children	120	0	24 hours (on time)
Bloody disease	20	0	24 hours (on time)
Unknow fever	5	0	24 hours (on time)
Malaria cases	520	0	24 hours (on time)
Acute Jaundice syndrome (Hepatitis)	15	0	Very late (more than 2days)
Scabies	177	0	24 hours (on time)
Measles	2	0	24 hours (on time)
Fire accident	38	0	24 hours (on time)
Electric accident caused a fire	38	0	24 hours (on time)
Increased mosquito density	15villagesreported	0	24 hours (on time)
Abortion and death in animals	0	17	24 hours (on time)
Floods	1600	2	24 hours (on time)
Unconsciousness for school student	24	0	24 hours (on time)

This table reflect the disease reported through the routine surveillance for Algbaleen locality in 2020 from the selected sentinel site in the locality

Disease report	Number of cases	Number of deaths	Report time
Malaria cases	22709	0	Weekly report
Dysentery cases	3041	0	Weekly report
Typhoid	3935	0	Weekly report
Tuberculosis	8	0	Weekly report
Food poisoning	9	0	Weekly report

Time of reported signals to locality level by community volunteer White Nile state -Algableen locality from 2017 – 2020

	Frequency	Percent
24 hours	27	90.0
2 days	3	10.0
Total	30	100.0

Time of reported signals to locality level by community volunteer White Nile state -Algableen locality from 2020 the result revealed 90% of volunteer reported signals to locality, 96.7% of them they were using phone call to report the locality level.

Feedback sends from Algableen locality level White Nile state to community volunteer at villages level 2020

	Frequency	Percent
Yes	38	95.0
No	2	5.0
Total	40	100.0

Feedback send from Algableen locality level White Nile state to community volunteer level 2020 the result revealed that 95% of the community volunteers at village level received feedback report from locality level, just 5% of them didn't received feedback, 90% of them received the feedback through phone call and 10% of they received feedback director during the locality team filed visit

Discussion

Community volunteers they had significance contribution in reporting the diseases cases and event that can affect the human life this increased the sensitivity of surveillance system in general specifically in the area where no health facility located also the community volunteer had great role in providing awareness for the community members to visit the health facility when they felt sick, selection of community volunteers was done according to standard criteria approved by federal ministry of health.

As study result revealed that 60% of volunteers their age groups between 20 to 30 years old , 65% of them were male , 50% of them had secondary level of education For the community volunteer participated in the surveillance system as village volunteer the result revealed that 77.5% of them were voluntary participated, 60% of them they have been working for long time more than 2 years this reflected the sustainability of the system in Algableen locality , the result revealed all of them the received a training and they are fully aware with the surveillance system core function and requirement.

The result revealed that the community volunteers had clear contribution in reporting the cases and event in the study area and they increase the sensitivity of the surveillance system in general, 35% of them they report syndromic diseases, disaster, and animals' deaths (cases), 57% of them they report syndromic diseases and disaster, related to that the result revealed 97.5%

of volunteers they had the reporting format available and 75% reporting signal to locality level regularly.

From the analysis the volunteers had report 54% of biological notifications signal as diarrheal diseases, 81% of natural notifications signal reported as flood, and also reported the increases of Mosquito in the study area.

Result reflected the main role of community volunteers in reported signals to locality level 32.5% of them reported disease cases like diarrheal diseases, Severe respiratory syndrome, Skin disease in children, Measles, Scabies, bloody disease, Acute Jaundice syndrome (Hepatitis), malaria and unknown fever. 32.5% of them report natural event like flood, fire accident, Electric accident caused a fire and Unconsciousness for school student. 10% of them reported Increased mosquito density and Abortion and death in animals, 90% of those diseases and event reported with 24 hours, all these signals were registered in the registration book 100% and 96.7% of these singles were reported through phone calls.

Compared this finding with disease reported through sentinel site-based surveillance found that this system just report malaria, Dysentery cases, Typhoid, Tuberculosis, and food poisoning this reflect the community-based surveillance increased the sensitivity of indicator-based surveillance in area of implementation.

95% of volunteers at community received feedback from locality level and most of them received this feedback either by phone call or field visit, 72% of community volunteer had a supervision from the locality level.

50% of the community volunteers they were in the area no health facilities located that increased the role of them in reporting the disease and cases and they became the only source of informa-

tion for those areas [7-16].

Conclusion

- For community surveillance Algableen locality The result revealed that the community volunteer had clear contribution in reporting the cases and event in the study area and they increase the sensitivity of the surveillance system in general, 35% of them the report syndromic diseases, disaster, and animals' deaths (cases), 57% of them they report syndromic diseases and disaster, related to that, the result revealed 97.5% of volunteers they had reporting format available and 75% reporting signal to locality level regularly
- The study reflected the main role of community volunteers in reported signals to locality level 32.5% of them reported disease cases like diarrheal diseases, Severe respiratory syndrome, Skin disease in children, Measles, Scabies, bloody disease, Acute Jaundice syndrome (Hepatitis), malaria and unknown fever. 32.5% of them report natural event like flood, fire accident, Electric accident caused a fire and Unconsciousness for school student. 10% of them reported Increased mosquito density and Abortion and death in animals, 90% of those diseases and event reported with 24 hours, all these signals were registered in the registration book 100% and 96.7% of these singles were reported through phone calls.

Acknowledgements

The authors thank the health emergency and epidemic directorate teams in Whit Nile state and Algableen locality levels for providing logistic, technical, and conceptual support to implement this system during the period of this study. The authors also thank all volunteers who was part from this study.

References

1. World Health Organization. (2008). International health regulations (2005). World Health Organization.
2. World Health Organization. (2014). Early detection, assessment and response to acute public health events: implementation of early warning and response with a focus on event-based surveillance: interim version (No. WHO/HSE/GCR/LYO/2014.4). World Health Organization.
3. Sahal, N., Reintjes, R., Eltayeb, E. M., & Aro, A. R. (2011). Feasibility of implementing recommendations to improve communicable diseases surveillance-a modified Delphi study. *African health sciences*, 11, 93-99.
4. World Health Organization. (2008). A guide to establishing event-based surveillance.
5. WHO. (2010). Protocol for Assessing National Surveillance and Response Capacities for the IHR. Geneva. (WHO/HSE/IHR/2010.7).
6. Sahal, N., Reintjes, R., Eltayeb, E. M., & Aro, A. R. (2010). Assessment of core activities and supportive functions for the communicable diseases surveillance system in Khartoum state, Sudan, 2005-2007. *EMHJ-Eastern Mediterranean Health Journal*, 16 (12), 1204-1210, 2010.
7. Ratnayake, R., Crowe, S. J., Jasperse, J., Privette, G., Stone, E., Miller, L., ... & Morgan, O. (2016). Assessment of community event-based surveillance for Ebola virus disease, Sierra Leone, 2015. *Emerging infectious diseases*, 22(8), 1431.
8. Kuehne, A., Keating, P., Polonsky, J., Haskew, C., Schenkel, K., De Waroux, O. L. P., & Ratnayake, R. (2019). Event-based surveillance at health facility and community level in low-income and middle-income countries: a systematic review. *BMJ global health*, 4(6), e001878.
9. WHO/EMRO. (2016). Manual for the assessment of the public health surveillance system with a focus on Early Warning and Response (EWAR) and Event-Based-Surveillance (EBS).
10. World Health Organization. (2014). Coordinated public health surveillance between points of entry and national health surveillance systems: Advising principles (No. WHO/HSE/GCR/LYO/2014.12). World Health Organization.
11. Zaghloul, A., Balajee, A., Varma, J., Idowu, R., & Merali, S. (2018). Africa CDC Event-based Surveillance Framework.
12. FMOH. (2017). Technical Guidelines for Community Based Surveillance System in Sudan.
13. CDC. (2001). Updated Guidelines for Evaluating Public Health Surveillance Systems.
14. FMOH. (2017). Standard Operating Procedures for Community Based Surveillance System Volunteers in Sudan.
15. Nsubuga, P., Eseko, N., Tadesse, W., Ndayimirije, N., Stella, C., & McNabb, S. (2002). Structure and performance of infectious disease surveillance and response, United Republic of Tanzania, 1998. *Bulletin of the World Health Organization*, 80, 196-203.
16. Event-Based Surveillance (EBS). (2021). Operational Guideline Khartoum, September 2021 Surveillance, and Information Directorate (SID).

Copyright: ©2023 Abdalla Mohammed Abdalla. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.