

RESEARCH

Investigating epidemic prone diseases: knowledge and practices of clinical health staff at Komfo Anokye Teaching Hospital (KATH)

Francis Adjei Osei (MPH)¹; Daniel Ansong(MBChB,FWACP,MSc)² ; Kofi Boateng (MPH); Collins Frimpong()¹; Nicholas Karikari Mensah(Dip)¹; Alfred Kwame Owusu (Dip)¹

¹ Public Health Unit, Komfo Anokye Teaching Hospital, Kumasi, Ghana

² Research and Development Unit, Komfo Anokye Teaching Hospital, Kumasi, Ghana

³ Family Medicine Directorate, Komfo Anokye Teaching Hospital, Kumasi, Ghana

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ABSTRACT

BACKGROUND: Early detection and prompt reporting of epidemic prone diseases (EPD's) has been cited as the pivot in the surveillance and control of outbreaks. The contributions by clinical staff towards early detections is highly relevant, however the level of knowledge and attitude towards reporting remains unknown. The study was therefore conducted to examine the knowledge and reporting standards of clinical staff towards outbreak investigations.

METHODS: A cross sectional study design was conducted in Komfo Anokye Teaching Hospital (KATH), tertiary hospital in Kumasi-Ghana between February and May 2013. Stratified, simple random sampling was used to select 111 participants and a structured questionnaire used as the instrument for data collection.

RESULTS: The mean age was 31.1(\pm 6.8) years. About 87% (n=95/111) indicated knowledge of EPD's. More than half of these, 62.1% (n=59/95) had no idea of the definition and 30.5% (n=29/95) gave correct definition of EPD's but had limited knowledge on the laboratory specimen required for its investigation. About 48% (n=46/95) of the respondents indicated that they would consult the nurse-in-charge of the ward instead of the public health official when an outbreak is suspected.

CONCLUSION: The knowledge level of EPD's was generally low but was found to be high with meningitis and poliomyelitis. The study has shown that the procedure for reporting EPD's remains a challenge in the Komfo Anokye Teaching Hospital. A protocol on outbreak investigation procedures would address the gaps identified in the study.

Background

Epidemic prone diseases are diseases that have the potential to spread quickly among human populations. They include cholera, measles, meningitis, and viral hemorrhagic fevers. One of the distinguishing features is that have a high case fatality than any other disease category. These diseases continue to be major public health problems worldwide and continuous surveillance at the health institution is critical for early detection and response.

Outbreak investigation is a method for identifying and evaluating people who have been exposed to an unusual occurrence of disease or other health problems. To investigate an epidemic or an outbreak requires; setting criteria to define the case, active case finding, verifying diagnosis and confirming the outbreak, and communication of findings.¹ These processes need to be carried out quickly in order to prevent additional cases in the current outbreak, prevent future outbreaks and to minimize economic and social disruptions.²

Many outbreaks have occurred around the world with large morbidities and mortalities^{3,4}. Disease outbreaks affect both public health and the health staff who risk their life to manage the cases.

Adequate knowledge of healthcare professionals is a prerequisite for effective case detection, reporting, management and case containment in the hospital setting. Prompt case identification and notification is therefore required to halt the spread of the diseases. .

Robust surveillance system requires an immediate identification of the disease and prompt investigation to prevent and manage outbreaks. Key staff involved in this exercise in a healthcare setting includes but is not limited to clinicians, nurses and laboratory personnel. Clinicians are required to recognize early the existence of such diseases. The laboratory technician is required to conduct early confirmation of cases and to identify new pathogens.

The implication of not identifying diseases that have the potential of spreading among humans could lead to serious fatalities and resource demand ^{5,6}. The Ebola Virus Disease (EVD), since its re-emergence had affected 26,648 with 11,007 deaths (case fatality rate of 40.65%) as of July 26, 2015 ⁷. A significant number of health workers have been infected with an estimated 50% dying ⁸. Ebola has taken the lives of prominent doctors in Sierra Leone, Guinea and Liberia, depriving these countries not only of experienced and dedicated medical personnel but also of inspiring national heroes.

Morbidities and mortalities among health professionals can be minimized through timely and effective response towards diseases that are epidemic in nature. Further evidence to support this is a study by Arthur and Reingold (1998)⁹ on outbreak investigations which concluded that effective case detection and timely response to avert outbreak should be considered pivotal in managing communicable diseases. It is therefore of concern that health professionals know about what constitute these cases, thus their case definition, their signs and symptoms, and the samples needed for further investigations. It is also of great essence that health professionals understand the needed precautionary measures and the line of reporting of epidemic prone diseases.

Komfo Anokye Teaching Hospital is a 1500 bed capacity hospital and serves as the main tertiary centre responsible for the referral needs of the Northern sector of Ghana. The hospital has 11 clinical directorates with 294, 487 and 952 laboratory workers, doctors and nurses respectively with varied specialties ¹⁰. Despite the existence of these highly specialized staff, there are no evidence of their knowledge and practices towards outbreaks investigations.

Inherent in the hospital structure is a Public Health Unit responsible for the detection of communicable diseases and coordination of actions within and outside the hospital to avert outbreaks. The unit however relies on its few staff within the hospital to detect such cases. Despite the efforts of the unit, there are instances of late reporting of suspected epidemic prone diseases. The problem of under-recognition of diseases, particularly those that are new to an area or those with non-specific symptoms has the potential to herald an epidemic.

The clinical staff's understanding of communicable diseases, its relevance and the implication on the resources of the hospital is not well understood. The study therefore examined the knowledge and reporting practices of clinical staff in outbreak investigations.

Methods

Study design

We conducted a cross-sectional study from February to May 2013 to examine the knowledge and reporting practices among KATH clinical staff on epidemic prone diseases. The cross sectional study design was conducted in a tertiary hospital in Ghana. To be eligible for inclusion, one must be a biomedical scientist (laboratory personnel), a nurse or a doctor and must have worked in the hospital for at least six months. The study population who had obtained less than six months working experience was excluded.

Study site

The Komfo Anokye Teaching Hospital is 1500 bed capacity hospital and serves as the main tertiary centre responsible for the referral needs of the Northern sector of the country. The hospital has a total work force of about 3292. The hospital has 11 clinical Directorates, 2 non clinical Directorates and 10 support units. The study targeted clinical health workers (Doctors, Nurses and Biomedical Scientists) of the hospital. The population; Doctors, Biomedical Scientists and Nurses account for 15.1%, 8.9% and 32.1% respectively of the total population of 3292 ¹⁰. Four clinical directorates and 111 clinical staff who were present during the working hours of the day(s) were randomly selected and recruited in the study for a period of six weeks between April and May 2012.

Sample size and sampling technique

The sample size was estimated with the Population (N=1733), confidence level of 95% and 5% error margin. A total of 111 were used.

Stratified sampling was conducted on the clinical staff. Simple random sampling of the strata during the working hours of the day was done. KATH has 294, 487 and 952 Biomedical Scientists, doctors and nurses respectively. Again, the 11 clinical directorates of the hospital were shuffled and 5 clinical directorates were randomly selected. Respondents were then chosen from each of the selected directorates by simple random sampling.

Ethical approval

Ethical approval for the conduct of the study was sought from the Committee on Human Research and Publication and Ethics of KNUST/KATH (CHRPE). Informed consent was obtained from each respondent.

Data collection and analysis

A structured questionnaire was used as the instrument for data collection. It comprised of both open and closed ended questions. Apart from the personal information of study participants, information such as diseases that make up epidemic prone diseases, required samples and other investigative procedures were also collected. Respondents who indicated of having no idea on epidemic prone diseases were not further assessed on the other variables. Data collected were entered into database which was designed using SPSS version 16 software. StataC 12 software was used in analyzing the data. Summary statistics of age, sex and profession was conducted. Majority of the data were analyzed using percentages.

Results

Demographic characteristics of respondents

The mean age was 31.1(±6.8) years. More than half 63.1% (n=70/111) of the respondents were females. Nurses constituted majority, 63.1% (n=70/111) of the respondents studied whereas doctors and Laboratory personnel amounted 23.42% (n=26/111) and 13.51% (n=15/111) respectively. A little over thirty six percent(n=40,36.04%) belonged to the Medicine directorate as the rest constituting 29.7%, 20.7%, and 13.5% were obtained from Polyclinic, Child health and Diagnostics directorate respectively .

Knowledge on investigating epidemic prone diseases

Response on assessment of whether or not health staff know about epidemic prone diseases (EPD's) showed 85.6% (n=95/111) positive response . More than half 59(62.1%) had no idea on the definition of EPD's. The remaining who made an attempt defined EPD's as diseases that easily spread in communities, among person to person and others .

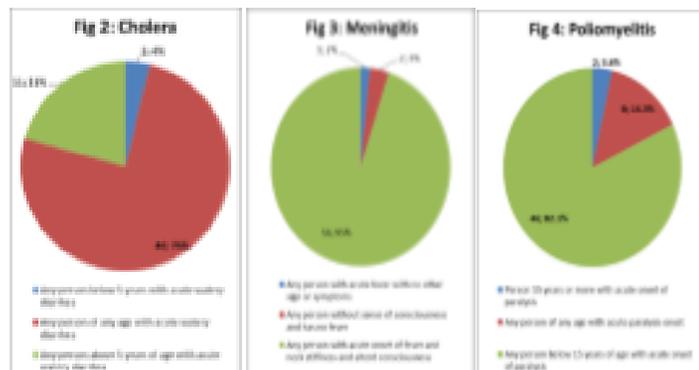
More than half, 53.7% (n=51/95) of respondents agree that cholera is an epidemic prone disease followed by meningitis with 42% (n=40/95) of response. The least epidemic prone disease to be noted was viral haemorrhagic fever (n=16/95, 29.6%). Malaria which is not an epidemic prone disease was cited as one by 25 (26.3%) table 1

The case definitions for Cholera, Meningitis and Poliomyelitis given by respondents have been illustrated with figures; 2, 3 and 4 respectively.

Table 1 Types of epidemic prone diseases (EPD's) indicated by respondents.

Diseases Identified As EPD's	An EPD n(%)	Not an EPD n(%)
Measles	36 (37.9)	59 (62.1)
Cholera	51 (53.7)	44 (46.3)
Viral haemorrhage fever	16 (16.8)	79 (83.2)
Shigela	22 (23.2)	73 (76.8)
Malaria	25 (26.3)	70 (73.7)
Meningitis	40 (42.1)	55 (57.9)
Yellow fever	36 (37.9)	59 (62.1)

The samples to be taken when epidemic prone diseases are suspected were sought by considering three EPD's (Meningitis, cholera and poliomyelitis). In meningitis investigations, a total 32 out of 44 respondents representing 81.3% answered positive to the sample needed. Majority 49 (77.8%) of the 66 respondents who answered for the sample taken for cholera agrees that stool sample is taken for cholera investigations. About forty percent (39.0%) of the respondents studied were of the view that blood sample is used for investigating poliomyelitis cases, none agrees to the use of rectal swab whereas 17 (27.9%) do not know the sample used for polio investigations



Response towards investigating epidemic prone diseases.

About 70% (n= 66/95) of the respondents affirmed the need for the investigation of outbreaks. The reasons why outbreaks must be

investigated were; to prevent additional cases in the current outbreak (31.8%, n=91/286), Prevent future outbreaks (30.4%, n=87/286), minimize economic and social disruption (18.9%, n=54/286) and learn about a new disease (19.9%, n=54/286)

Reporting practices towards outbreak investigations.

The study revealed that nearly half, 48.4% (n=46/95) of the clinical staff will report to the nurse in charge of the Unit in cases of suspected disease outbreak. The Public Health Unit was the second point likely to be reported to and the doctor in charge was seen as the next person to receive the report and about 22.1% (n=21/95) indicated as having no idea on the line of reporting (table 6).

Discussion

The study has shown that there are limited information on the knowledge and reporting standards of clinical staff regarding outbreak investigations. There was variability of knowledge content on EPD's and epidemic reporting standards. A quarter of respondents indicated that malaria was an epidemic prone disease, which is in contrast with epidemic prone diseases listed in the disease surveillance manual by the WHO/CDC¹ and about 14.4% of the respondents had no idea on EPD's. This raises concern in terms of outbreak notification and prompt reporting of disease in the institution. The limited knowledge in information is of greater concern in terms of personal protective practices during patient care. In circumstances when pathogens can spread among health personnel, they are expected to be knowledgeable on EPD and use this information to engage in safety practices in their professional duties.

Of all the epidemic prone diseases that were investigated, the study has found out that clinical staff had less knowledge on Viral Haemorrhagic Fevers. Considering the virulent nature, the high mortality and the speed of spread of haemorrhagic fevers and other epidemic diseases, a high level of knowledge and awareness by health staff is required in every epidemic prone population to avoid the unfortunate occurrence of health staff acquiring the disease as observed in Nigeria, Liberia and Sierra Leone. It is worthy of note that this cross-sectional study was conducted at a time that Ebola Virus Disease (EVD) had not occurred. However, this study provides useful evidence to some of the challenges faced and the lessons learnt by affected countries. The gaps that exist in the scientific knowledge of the epidemiology, prevention, treatment and surveillance of EVD have contributed to the late detection of the outbreak and difficulties in initial containment of the outbreak. This resulted in a significant number of health workers being affected resulting in deaths for some. The outbreak though currently contained is not yet over and can still spread to other West African countries including Ghana, hence the need to sustain health personnel knowledge and practices are key.

The absence of knowledge on EPD's is worrying and calls for further understanding in the training curriculum of health professionals.

The high level of knowledge on poliomyelitis as EPD is commendable. This can be attributed to the effort that is being placed on the polio eradication advocacy programs in the public health sector of the country¹¹. A high level of awareness was seen in this study to the relevance of outbreak investigation by the clinical staff. This findings support a study done at UC Berkeley School of public health on conducting an outbreak investigation².

Knowledge on the type of samples to be taken varied among various epidemic prone diseases. More people were familiar with the sample used for cholera and meningitis examination and less familiar with sample used for poliomyelitis. It is very difficult to ascribe reasons for the difference in knowledge in the samples required. This calls for research to further understand the difference in knowledge and use the findings to address the gap in knowledge.

Ideally the institutional protocol requires that health professionals upon suspect of EPD's report directly to the Public Health Unit. However, this study found different reporting lines which are worrying since it could contribute to late reporting of diseases of epidemic potential.

The study was limited in the scope of diseases that causes epidemics and focus of specific epidemic prone diseases of current public health relevance in the study setting. Nevertheless, the study has revealed interesting gaps in knowledge among healthcare professionals on EPDs. It is worth noting that there are limited studies published in the area and there will be the need to do further research work and use the findings to bridge the knowledge gap.

Ahead of further scientific work in this area, a substantial reduction in case detection delays and late reporting can be achieved by sensitizing clinical staff on public health concerns; ensuring that various simplified case definitions are used by health professionals, clear lines of reporting and sample collection protocols should be strictly adhered to.

This study exposes the gaps in the health surveillance system in terms of improving surveillance in healthcare settings in building capacities to provide continuous training and update information on emerging pathogens that can cause outbreaks such as the EVD.

The existing surveillance capacity in country are few, centralized as well as limited to academic health institutions and therefore in the event of an outbreak the health system will potentially struggle to contain and manage the disease appropriately. This could be a real situation in the face of the findings of this study that health personnel have limited knowledge in terms of diseases that has the potential to herald an outbreak and reporting lines of outbreak investigation processes.

A decentralized system capable of detecting cases right from the community level to the highest healthcare seeking point is urgently needed. Focusing attention on health personnel knowledge and practices across the health systems of Ghana is urgently needed.

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