

Ebola Virus Disease: Knowledge, Attitude, Practices of Health Care Professionals in a Tertiary Care Hospital

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Abstract : Ebola Virus Disease (EVD) Outbreak is notified as Public Health Emergency of International Importance on 8th August, 2014 by WHO. India with its large population of immigrants is at high risk for the spread of EVD. In this context this study is a reality check to assess the KAP of our healthcare providers and to study our preparedness, for such situations.

Objectives : To evaluate the gaps in knowledge & attitude amongst Healthcare Providers regarding EVD and also to assess their routine practices of personal protection which is vital to prevent spread of contagious diseases such as EVD.

Materials & Methods : A semi-structured questionnaire based cross sectional study was conducted among 20 consultants, 14 registrars, 18 resident doctors, 102 staff nurses & 25 lab technicians at SNH Multi-speciality Hospital, Shimoga, a Tertiary Care Referral Hospital in Central Karnataka.

Results : The knowledge of registrars (71.4%) was strongest, followed by consultants (60%), resident doctors (55.5%), nurses (45%) and lab technicians (40%). Nurses (62.7%) showed best overall attitude, followed by consultants (55%), residents (51%), registrars (50%), lab technicians (40%). Adherence to standard personal protection guidelines was highest among consultants (60%), followed by residents (50%), nurses (48.03%), registrars (42.85%), lab technicians (36%). Main reasons of non-adherence in our study were lack of knowledge (24%), lack of motivation (21.5%) & lack of supplies (19.5%) and lack of time (15%). Needle stick injuries were frequent among residents (88.8%), followed by registrars (55.6%), nurses (39.4%), consultants (38%) and lab technicians (31.03%). Adherence to standard biomedical waste disposal practices was highest among registrars (88%), followed by consultants (83.4%), nurses (72%), residents (68.8%) and lab technicians (60%).

Conclusions : Overall 73.6%, 83.1%, 69.2% participants showed satisfactory (>50% score) knowledge, attitude and practices respectively. Gaps between knowledge and practices were seen in all categories which is alarming. These gaps were mainly due to lack of knowledge, poor motivation, busy work schedule and poor supplies all of which need to be addressed. We need to catch up with regards to basic safe medical practices before diseases like EVD spreads to our region.

Key Words : Knowledge, Attitude, Practice, Ebola Virus Disease, Healthcare Professionals, personal protection.

Introduction : Ebola Virus Disease (EVD), formerly known as Ebola hemorrhagic fever is a severe often fatal illness in humans^{1,2}. The virus belongs to Filoviridae3 family with 5 different species (Zaire, Bundibugyo, Sudan, Reston and Tai Forest). 2014 West African outbreak is caused by Zaire species. CFR during outbreaks is upto 90%.

This is initially transmitted to humans from Fruit bats (natural host) of Pteropodidae family. During outbreaks transmission is mainly from humans to human. EVD

affects humans & some non-human primates (monkeys, gorillas & chimpanzees) via direct contact of skin & mucosa with blood, other body fluid/ secretions (stool, urine, semen, tears etc) of infected/ deceased patients after the incubation period (2-21 days). Sexual transmission is possible after recovery till 7 weeks thereafter.

Ebola Virus Disease (EVD) Outbreak in West Africa (Guinea, Liberia, Sierra Leone & Nigeria) is notified as extraordinary event & Public Health Emergency of International Importance (PHEIC) on 8th August, 2014 by WHO¹. Level 3 response (highest) has been initiated by DG, WHO on 26th July 2014-5. Cumulative number of cases till 4th August 2014 were 1711 and total number of deaths were 9326. Healthcare workers, family

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members/ friends in close contact with patients and mourners who get into direct contact with bodies of deceased are at high risk for spread³⁻⁵.

India with its large population of immigrants is staring at the possibility of an outbreak of EVD. Indian Ministry of Health & Family Welfare⁶⁻⁸, Gov't of India has reviewed the scenario in India along with other concerned organizations like MEA, Civil Aviation, NDMA, Armed Forces, ICMR & WHO India on 5th August 2014 and issued guidelines to travellers⁹ by land, sea, air & all Health care providers in India. Our level of preparedness was revisited and facilities for tracking travelers from affected countries, isolation of sick passengers, strengthening our surveillance & diagnostic facilities at designated centres were put in place.

Evidence suggests that our preparedness towards such eventualities is far from satisfactory. There are significant lacunae in personal protection practices & biomedical waste management in India. In this context we have conducted this study as reality check to assess the knowledge, attitude & practices (KAP) of our Healthcare Providers and to study our preparedness, if we are to face an outbreak scenario in our region¹⁰.

Objectives :

1. KAP among healthcare professionals like doctors, nurses & paramedics who constitute the high risk group in communicable diseases like Ebola Virus Disease in tertiary care hospital in Karnataka.
2. To extract the lacunae in attitude & practices among healthcare professionals related to personal protection in tertiary care hospital.
3. To find out the reasons behind such gaps between knowledge & practice .

Methodology :

Study Design & Setting: This is a cross-sectional study involving doctors (consultants, registrars, and resident doctors), nursing staff & lab technicians working in all the departments in Sahyadri Narayana Multi-speciality Hospital, a 500 bedded Tertiary Care Super-speciality Referral Hospital in Shimoga, Central Karnataka.

Study Period : July 2014 to October 2014

Inclusion Criteria: All consenting & working healthcare professionals belonging to above categories were included. Of all those eligible 8% were excluded as they were unaware about EVD. There were 179 eligible & consenting participants including 20 consultants, 14 registrars, 18 resident doctors,-nursing staff and 25 lab technicians.

Sampling Strategy: All the consenting participants who knew about EVD were stratified according to their designation (designation being a surrogate for experience, a potentially compounding factor) as consultants (senior specialist doctors & super-specialists), registrars (junior specialists), resident doctors (postgraduate trainees & duty doctors), staff nurses & lab technicians. Pre-empting a non response rate of 10% most of the eligible subjects were approached with a written consent stating their willingness to participate. They were told that individual responses & identity would be kept confidential, so that honest answers can be elicited.

Materials & Methods : A pre-tested, semi-structured questionnaire was compiled post piloting study to be used as a data collection tool. It comprised of 30 questions pertaining to KAP.

Questions related to knowledge comprised of details related to virus and disease epidemiology, endemicity, incubation period, mode of spread, natural host, signs/ symptoms, laboratory investigations, differential diagnosis, case fatality rate, complications, prevention strategies, need for isolation/quarantine, availability of specific treatment & vaccines. Knowledge questions also included issues like colour codes in waste disposal, hand washing technique, needle stick injury response & prevention, universal protection & personal protections equipments and their proper usage.

Attitude questions were related to how much importance was given to practices of personal protection, feeling of safety at workplace, attitude towards wearing PPE, views about PEP, readiness to admit and treat highly communicable & fatal diseases which do not have specific therapy like EVD.

Questions related to practice pertained to hand washing technique, recapping of used needles, waste disposal practices, wearing of barriers of personal protection, personal protection in special situations like H1N1/ HIV-AIDS/HBVD/ EVD, vaccination against Hepatitis B virus & protective titre estimation etc. Reasons for non adherence to universal as well as standard hospital safety & waste disposal policies were also analyzed.

This self administered questionnaire was filled by the participants in a quiet and comfortable environment free of distractions or external/ internal assistance. They were given sufficient time to read, comprehend & answer after adequately addressing all doubts. All questionnaires were translated into Kannada from English by experts when needed. Anonymity of each subject was ensured at all stages.

Results :

The results were analyzed across all 3 domains for various categories. The responses were rated as poor (<50%), average (50-60%), good (60-80%) and very good (>80%) depending upon a predetermined criteria which considered the number of correct answers. All

scores above 50% in each domain were considered as satisfactory.

The knowledge of registrars (71.42%) was strongest, followed by consultants (60%), resident doctors (55.5%), nurses (45.09%) and lab technicians (40%).

Table 1: Knowledge among the participants about EVD.

KNOWLEDGE				
Category	<50% Poor	50-60% Average	60-80% Good	>80% Very Good
Consultants(N= 20)	3 (15%)	5 (25%)	8 (40%)	4 (20%)
Registrars(N= 14)	1 (7.1%)	4 (28.5%)	5 (35%)	4 (28.5%)
Residents(N= 18)	3 (16.6%)	7 (38.8%)	7 (38.8%)	1 (5.5%)
DoctorsOverall(N= 52)	7 (13.4%)	16 (30.7%)	20 (38.4%)	9 (17.3%)
Nursing Staff(N= 102)	29 (28.4%)	38 (37.2%)	35 (34.3%)	0
LaboratoryTechnicians(N= 25)	11 (44%)	10 (40%)	4 (16%)	0
HealthcareWorkersOverall	47 (26.2%)	64 (35.7%)	59 (32.9%)	9 (5%)

Nurses (62.74%) showed best overall attitude, followed by consultants (55%), residents (51%), registrars (50%), lab technicians (40%).

Table 2: Attitudes among the participants about EVD

ATTITUDE				
Category	<50% Poor	50-60% Average	60-80% Good	>80% Very Good
Consultants (N=20)	2 (10%)	7 (35%)	8 (40%)	3 (15%)
Registrars (N=14)	4 (28.5%)	5 (35.7%)	4 (28.5%)	1 (7.1%)
Residents (N=18)	5 (27.7%)	6 (33.3%)	5 (27.7%)	2 (11.1%)
Doctors Overall (N=52)	11 (21.1%)	18 (34.6%)	17 (32.6%)	6 (11.5%)
Nursing Staff (N= 102)	12 (11.7%)	27 (26.4%)	48 (47%)	15 (14.7%)
LaboratoryTechnicians (N=25)	7 (28%)	10 (40%)	6 (24%)	2 (8%)
HealthcareWorkersOverall	30 (16.7%)	55 (30.7%)	71 (39.6%)	23 (12.8%)

Adherence to standard personal protection guidelines was highest among consultants (60%), followed by residents (50%), nurses (48.03%), registrars (42.85%), lab technicians (36%).

Table 3: Practices among participants with regards to personal protection, safety issues and biomedical waste management.

PRACTICES				
Category	<50% Poor	50-60% Average	60-80% Good	>80% Very Good
Consultants(N= 20)	2 (10%)	8 (40%)	7 (35 %)	3 (15 %)
Registrars(N= 14)	3 (21.4%)	6 (42.8%)	4 (28.5%)	1 (7.1 %)
Residents(N= 18)	2 (11.1%)	7 (38.8%)	8 (44.4 %)	1 (5.5%)
Doctors Overall(N= 52)	7 (13.4%)	21 (40.3%)	19 (36.5%)	5 (9.6%)
Nursing Staff(N= 102)	19 (18.6%)	55 (53.9%)	21 (20.5%)	7 (6.8%)
Laboratory Technicians(N= 25)	5 (20%)	11 (44%)	8 (32%)	1 (4%)
Healthcare Workers Overall	31 (17.3%)	87 (48.6%)	29 (16.2%)	8 (4.4%)

Discussion: Overall 73.6%, 83.1%, 69.2% participants showed satisfactory (>50% score) knowledge, attitude and practices respectively. Knowledge about EVD outbreak was largely known through electronic media (41.2%), followed by newspapers (25%) and television (19.5%) establishing their role in updating our medical knowledge.

Since there is lack of statistical support to the hypothesis, the conclusions are looked at as just a reality check. Experience may not influence the knowledge as this is a new disease in the subcontinent previously unheard of. Though not a single case is reported from India, this effort is to see how much our HCWs are tuned to the newer developments in the field of medicine and also to ascertain our level of preparedness.

In case of EVD outbreak at our centre 81.6% of nurses, 69.2% of consultants, 66.6% of registrars, 44.4% of lab technicians were willing to admit them and treat as inpatient, however only 33.3% of resident doctors were prepared to treat. 66.6% of resident doctors, 36% lab technicians, 34% registrars, 30% consultants and 11% nurses were inclined to refer the patient elsewhere. 33.3% resident doctors, 28% lab technicians, 23.6% nurses, 11.3% registrars and 7.5% consultants felt that our hospitals were fully equipped to face EVD outbreak. 77.7% resident doctors, 68% nurses, 54.2% lab technicians, 55.5% registrars and 46% consultants did not safe from hospital acquired infections at workplace. Occupational risk is related to the quality of care

delivered at work place¹¹.

Adherence to standard personal protection guidelines was highest among consultants (60%), followed by residents (50%), nurses (48.03%), registrars (42.85%), lab technicians (36%). In a study from Delhi, India, it was shown that in spite of having adequate knowledge, adherence to universal precautions remained poor except wearing gloves. Though 90% respondents in this study followed safe disposal of sharps, 40% did practice recapping/ bending of needles¹². Hands are a major source of infection to HCWs¹³ & potentially infected blood may be retained beneath the finger nails for upto 5 days¹⁴. 90% consultants, 77.7% registrars, 57.8% nurses, 55.6% resident doctors and 32% of lab technicians sincerely practiced 3 minute hand washing before handling every patient.

Main reasons of non-adherence in our study were lack of knowledge (24%), lack of motivation (21.5%) & lack of supplies (19.5%) and lack of time (15%). A study conducted in AFMC, Pune sited density of blood body fluid splash exposure as 537.14 per 100 person years and needle stick injury as 228.57 per 100 person years¹⁵. In this study 91% said it was not possible to use PPE in emergency situations as compared to 75% in rural India¹⁶. Reasons for non-compliance in studies from most developing countries were busy schedule, non use by colleagues, emergencies and discomfort¹⁷.

In our study vaccination coverage against Hepatitis B was 98.33% and 12% of lab technicians were

unimmunized. This was seen as a surrogate marker of preventive attitude of HCW. Confirmation of sero-protection was highest among registrars (64%) followed by residents (55%), consultants (44%), nurses (38%) and lab technicians (33%). Vaccination coverage ranges from 18% in Africa to 77% in Newzeland¹⁸. A study conducted in Pakistan doctors were more likely to be vaccinated than other HCWs¹⁹.

Needle stick injuries were frequent among residents (88.8%), followed by registrars (55.6%), nurses (39.4%), consultants (38%) and lab technicians (31.03%). WHO reports that globally 3 million percutaneous exposures occur annually and over 90% of them occur in resource poor nations²⁰ which also have a high prevalence of HIV. Worldwide they account for 2.5% of HIV cases & 40% of Hepatitis B & C cases among HCWs²¹.

In our study these exposures were higher in those with less than 5 years of experience (64%). Clarke et al in their study found that the probability was inversely related to years of experience²² which could be attributed to higher energy, aggression of youth, poor skill & knowledge. According to researchers, 40-70% of all needle stick injuries are unreported²³. In our study only 26.5% of those exposed took PEP against HIV. This was far better than a similar study conducted in India where only 7.8% of HCWs took PEP²⁴. 65% of exposed were unaware of availability of PEP treatment at our hospital. Such exposed HCWs express significant fear, anxiety and emotional stress resulting in behavioural change²⁵.

Adherence to standard biomedical waste disposal practices was highest among registrars (88%), followed by consultants (83.4%), nurses (72%), residents (68.8%) and lab technicians (60%). In a similar study from Manipal, India many consultants (24%), followed by nurses (23.3%), housekeeping staff and junior doctors (17.6%) were not following standard practices of biomedical waste disposal²⁶.

Another purpose behind the study was to conduct awareness programme on EVD, training programme on personal protection, universal protection, safe injection/sampling technique, standard waste disposal methods and then see how much of a change in KAP was possible. Conclusions will serve as a benchmark for us to conduct more such activities to bring about desirable changes in KAP which is a giant step forward in ensuring safety of all concerned. Nsubunga et al identified lack of training as a major risk factor for needle stick injuries²⁷. All would agree that prevention is better than cure.

Conclusions :

1. Overall 73.6%, 83.1%, 69.2% participants showed satisfactory (>50% score) knowledge, attitude and practices respectively.
2. Gaps between knowledge and practices were seen in all the categories which is alarming.
3. These gaps were mainly due to lack of knowledge, poor motivation, busy work schedule and poor supplies all of which need to be addressed.
4. We need to catch up with regards to basic safe medical practices before diseases like EVD reaches our doorsteps.

Recommendations : Regular hands on training programmes (IEC: information, education and communication strategies like flow charts) on hospital safety practices, personal safety barriers, safe injection practices, safe disposal of hospital waste and periodic verification of vaccination/ seroconversion status of healthcare workers is needed. This will instill a feeling of work safety and empowerment.

Protocols for needle stick injury have to be written and explained to all healthcare providers. Accidental exposure to sero-positive cases of HIV & HBV have to be immediately addressed appropriately. These infections are preventable among HCWs through proper infection control strategies²⁸. Isolation rooms/ wards and facility for quarantine has to identified.

A built in mechanism to overcome any deficiencies in universal precautions is necessary to bridge the gap²⁹⁻³⁰. Safety manager to overlook these activities is a good initiative. He will conduct surprise checks periodically and will monitor the vaccination activities regularly. Institutional policies regarding communicable and other notifiable diseases have to be drawn.

Vaccination against H1N1 and hepatitis B should be made mandatory for employment and annual appraisal. PEP for HIV & Anti Hepatitis B immunoglobulin has to be available round the clock. Proper information about whom to approach for PEP has to be communicated to all HCW. Need to start PEP as early as possible, proper schedule, dose and duration as per risk stratification has to be made known to all HCWs. Outbreak response team and infection control team has to be identified in all tertiary care facilities

Abbreviations : EVD (Ebola Virus Disease), KAP (Knowledge, Attitude and Practice), HCW (Health Care Worker), PPE (Personal Protection Equipments), PEP (Post Exposure Prophylaxis), CFR (Case Fatality Rate).

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