

ARTICLE

Knowledge, Attitudes and Practices of Health Care Workers in Benghazi, Libya towards Post Exposure Prophylaxis for HIV

Ikram A Barakat Ben Saoud, Ibtihal Fathi Elsour, Amna Mohammed Elbargathi, Asma Marzok Elmarak, Emad Shaaban Ali

Department of Family and Community Medicine, Faculty of Medicine, Benghazi University, Benghazi, Libya.

Corresponding author: Dr. Ikram Ben Saoud Email: ibarakatb@yahoo.co.uk

Published: 05 November 2013

Ibnosina J Med BS 2013;5(6):318-323

Received: 13 March 2013

Accepted: 14 July 2013

This article is available from: <http://www.ijmbs.org>

This is an Open Access article distributed under the terms of the Creative Commons Attribution 3.0 License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract

Background: Health-care workers (HCWs) have a substantial risk of exposure to HIV. Effective post-exposure prophylaxis (PEP) must begin within 72 hours of possible HIV exposure. **Objectives:** To assess knowledge, attitudes and practices (KAP) among HCWs with regard to HIV post exposure prophylaxis (PEP) in Benghazi, Libya. **Methodology:** A cross-sectional study was conducted in seven medical centers. A convenience sample of HCWs were surveyed with a based on published international and national HIV/AIDS care guidelines. Demographic characteristics, knowledge about HIV PEP and information on work practices were collected. KAP data scores were classified as good, satisfactory or poor. **Results:** HCWs had a high level of knowledge about HIV transmission and risk groups. Forty percent of nurses believed that the transmission rate of HIV is lower than HBV& HCV. The majority of HCWs were offered PEP as soon as possible after HIV exposure, and flushed the wound with alcohol

or antiseptics, but just over half of the nurses and less than quarter of the doctors had immediate HIV testing after exposure to potentially contaminated blood or body fluid. Nurses were observed to have variable practice in the use of gloves or protective clothing at work. The uptake of hepatitis B vaccine by HCWs was incomplete or absent in 41% of nurses and 59% of doctors. **Conclusions:** We conclude that the knowledge and attitude of HCWs about HIV PEP varied from satisfactory to good. Some misconceptions exist and need to be corrected. Health education for HCWs regarding HIV is essential to limit risk of transmission and to protecting staff and the welfare of the community. Occupational health clinics should be established in all hospitals to improve these attitudes and practices.

Key words: HIV /AIDS, health-care workers, Knowledge, Attitude, Practices. PEP, Occupational Health.

Introduction

HCWs are at risk of acquiring HIV infection by exposure to infected blood or body fluids (1). They can be exposed to HIV by sustaining needle stick injuries or cuts, getting blood or other body fluids in their eyes or mouth and by getting blood or other body fluids on their damaged or inflamed skin. The risk of HIV transmission in these ways is extremely low (<1%) for all exposures but can be reduced further by appropriate and timely post exposure prophylaxis. PEP involves taking antiretroviral drugs as soon as possible after a potential HIV exposure to reduce the chance of HIV transmission. PEP must be started within 72 hours of HIV, before the virus begins to rapidly replicate, to be effective. PEP is not 100% effective i.e. it does not guarantee that someone exposed to HIV will never become infected with HIV (1). The risk of HIV transmission in HCWs should be included in every workplace safety plan. HCWs and members of the practice team should be aware of this risk, know how to reduce the risk and be familiar with what to do in the event of exposure to blood or body fluids such as needlestick. The recommended timing for PEP is within 1 hour of potential exposure and should not exceed 72 hours post-exposure (2-4). The aim of PEP is to inhibit the replication of the virus, thereby preventing establishment of chronic state of HIV infection. It is noteworthy that HIV is much less contagious than hepatitis B virus (HBV) and hepatitis C virus (HCV). The transmission rate for HIV after contact is between 1:1000 and 1:100. Compared with HIV, the transmission rate for hepatitis C is 10 times higher and for hepatitis B is 100 times higher (2,4). Injuries involving occupational exposure to HIV infection should be immediately managed by allowing the injured area to bleed for a few seconds then washing the wound with soap and water. Occupational exposures must be recorded and professional HIV counseling and education of the healthcare worker should follow. The HCWs must be offered support, outpatient follow-up, and follow-up HIV testing as well as ensuring Confidentiality of results (1,4,5). If the source patient is HIV-positive, counselling, support, and referral of the HCW for continued treatment is required. PEP consists of 2-3 antiretroviral medications and should be taken for 28 days. If the source patient is HIV-negative, then PEP is discontinued and patient is retested at 6 weeks, 3 months, and 6 months (1,4,6).

Subjects and Methods

Objectives

We aimed to evaluate the knowledge and attitude of HCW towards HIV/AIDS and to explore their practices in

promoting PEP among HCWs in Benghazi, Libya.

Settings and Design

A descriptive cross-sectional study was conducted in the major seven medical centers in Benghazi, Libya [Hawari Hospital, Benghazi Medical Center (BMC), Pediatric Hospital (PH), Jomhoria Hospital, Jala Hospital and Naher and Immunology center]. Using convenience sampling, we selected a total of 310 HCWs. 155 were nurses and 155 were newly qualified doctors. Doctors who had been in employment more than 10 years were specifically excluded.

The Survey Instrument

A questionnaire was used to assess knowledge, attitude, and practices of health-care workers towards post exposure prophylaxis for HIV/AIDS. The study was conducted during the period between November 2012 and February 2013. The questionnaire was based on the recommendations of the World Health Organization (WHO), Center for Disease Control (CDC) and National Guidelines for HIV/AIDS. Collected data included gender, age, duration of employment, HIV/AIDS mode of transmission, risk behaviors and prevention. HCW were asked whether they have completed HBV vaccination. The practices of HCWs at work for using personal protective measures such as gowns and gloves, maintenance of hygienic practices, disinfection procedures, recapping of needles after use and presence of safety boxes were all documented.

Data analysis

Scoring technique was chosen to identify level of the awareness. Scoring for the 10 questions on knowledge and attitude allocated 1 mark for every question. Scores were categorized as deficient knowledge (poor), sufficient knowledge (average) or optimal knowledge (good). In scoring of the answers every answer was given 1 mark if the response is correct. Scores of 1-4 marks indicated deficient knowledge (poor; < 50 %), 5-7 marks as satisfactory knowledge (average; 50-80 %) and 8-10 marks as optimal knowledge (good; >80 %). Higher score indicated a higher level of knowledge, and better attitude and practices. All data were collected and analyzed using statistical program SPSS package (Chicago, Illinois).

Results

Study Sample and Response Rates:

A total of 329 health care professionals were approached. 310 responded. The male to female ratio was 1: 2.7. The mean age of the doctors HCW was 30 years and they have been

employed for 7 years. The majority of the young doctors were in the 28-30 years age groups (43 and 41 out of 155 respectively). The mean age of the nurses was 29.4 years, though 36 of the nurses did not state their age (Table 1).

KAP Survey: Prevention

Although, they had good knowledge about hospital acquired infection (blood as a source) (Table 2), There were gaps in the knowledge of health care workers about HIV infection. Nurses were deficient in knowledge about HIV sequelae and prognosis. Knowledge of risk behavior was satisfactory in both nurses and doctors (Table 2). The practices of wearing protective gowns and gloves at work was more likely in nurses (100%) than in doctors (70%). All HCWs did not recap needles after use. However only, 85.7 % of hospitals had safety boxes. The good practice of protective hygiene was not matched with the attitude that “there is no need for hand hygiene after removal of non-

powder gloves”. The uptake of Hepatitis B vaccination by HCWs was either incomplete or absent by 41%, 59% of nurses and doctors respectively.

KAP Survey: PEP

More than one third of the doctors (37.4%) perceived PEP after 72 hours as being reasonable practice whereas majority of nurses (88.4%) thought that PEP should be initiated as early as possible. In practice, the majority of HCWs would initiate PEP by flush wound by alcohol or antiseptics, express the wound and surrounding tissues. Over half of the nurses and under quarter of the doctors reported that they would go immediately for HIV testing after accidental needle sticks or exposure of damaged skin to contaminated body fluid or blood by HIV as per the guidelines (Table 3). The transmission rates of HIV, hepatitis B virus and hepatitis C virus were perceived differently by nurses and doctors. Forty percent of nurses and sixty percent of

Table 1. Gender and duration of employment of enrolled health care professionals from 7 Benghazi medical centers during 2012-2013.

Characteristic	Nurses		Doctors	
	Number	Percent	Number	Percent
Gender distribution				
Males	21	13.5%	63	40.6%
Females	134	86.5%	92	59.4%
Duration of employment				
< one year	17	10.9%	17	10.9%
1-4 years	49	31.6%	81	52.3%
5-7 years	21	13.5%	57	36.8%
> 7 years	51	32.9	0	0%

Table 2. Frequency of correct knowledge of HCWs about HIV/AIDS (N= 310).

Knowledge domain	Nurses		Doctors	
	Number	Percent	Number	Percent
Hospital Acquired infection (i.e. blood exposure incidents)	147	94.8	153	98
Transmission routes	130	83.8	149	96
Risk behaviors of HIV	100	64.5	149	96
HIV sequelae and prognosis	72	46.5	121	78
HIV/AIDS prevention	135	88.3	144	92.9

Table 3. Post exposure prophylaxis of HCWs after accidental needle stick injury or exposure of damaged skin to contaminated body fluid by HIV (N= 310)

Post exposure prophylaxis (PEP) Practices	Nurses		Doctors	
	Number	Percent	Number	Percent
Initiating PEP as soon as possible	137	88.4	109	70.3
Flush the injury or exposed skin with alcohol or antiseptic.	155	100	155	100
Express the surrounding tissue of the wound.	110	71	95	61.3
Intense massage.	4	2.6	12	7.7
Go immediately to specialist for HIV test.	88	56.7	37	23.8

doctors appreciated that the transmission rate of HIV is lower than HBV and HCV.

Discussion

This study revealed that nurses have inadequate knowledge about HIV sequelae and doctors' knowledge about HIV prognosis is only satisfactory. These results are in agreement with a previous study conducted in Vietnam, which demonstrated similar lack of knowledge regarding HIV with only a few staff having just the basic information. The reason for the lack of awareness in the Vietnam study was due to the lack of guidelines and protocols (7). In our study, we deliberately focused on younger doctors and excluded those who had been in practice more than 10 years, as we thought these would produce data more reflective of our education programs. However, a study from Greece assessed knowledge and attitudes of newly-qualified doctors towards AIDS infection and proposed that it is imperative that newly-qualified doctors are constantly informed and updated about AIDS infection, in order to minimize their inhibitions and compensate for their lack of knowledge, which is commonly observed in new doctors (8). Attaining high levels of knowledge about HIV infection is not impossible as very high rates (96%) were reported from Denmark (9). Our nurses were *observed* to adhere to the good practices of wearing protective gowns and gloves despite of their surprisingly negative *stated* attitude of "no need of hand hygiene after the removal of non-powder gloves". This may be explained by the fact that the gloves are sterile and protect from the infections (10). Only seventy percent of the doctors were wearing protective gowns at work. Although HCWs in this study invariably practiced non-recapping of used needles, it is unfortunate that not all hospitals have adequate safety boxes

for infection control. This is fairly inferior to other settings in which staff wore protective uniforms, maintained all hygiene practices and used disinfection procedure on all equipment (11). However, even if HCWs want to protect themselves by using protective equipment, not all health facilities do universally provide these means for them (7).

Doctors in the present study seemed more complacent in suggesting that the use of PEP after 72 hours is reasonable, while the majority of nurses affirmed that initiating PEP as early as possible after HIV exposure is good for prevention. The majority of HCWs would normally initiate PEP (flush wound & by alcohol or antiseptics, express the wound and surrounding tissues) but only just over half of the nurses and even less than quarter of the doctors would proceed immediately for HIV testing after accidental needle sticks or exposure of damaged skin to contaminated body fluid or blood in clear breach of the international and national guidelines (Table 3). Effective PEP should be initiated as soon as possible (ideally < 4 hours after the exposure) but PEP can be started up to 48 hours from exposure. For the treatment of the exposure site, washing of wounds and skin sites with soap & water and flushing mucous membrane with water and removal of any foreign materials is essential. Some experts recommend the immersion of the exposed finger in an antiseptic such as 1/10 bleaches, 70% alcohol or iodine for 5-10 minutes. Testing after 1 month may be done to reassure the HCWs but cannot rule out infection (4,11,12). A survey of needle stick injuries (NSIs) in Kenya showed that the HCWs had, in comparison to the uptake of hepatitis B vaccination (88% of those requiring vaccine), a low uptake of PEP (4% of those who had NSIs). This was attributed to the HCWs' fear of HIV testing and perception of NSIs as low risk (13).

WHO places hepatitis B infection among the top 10 causes of death in the world (14). In our study, 40% of nurses and 60% of doctors agreed that the transmission rate of HIV is lower than HBV and HCV, so we concluded that the attitude of nurses was poor and of doctors was satisfactory. We compared our observation with results from HIV-related knowledge and stigma in Libyan high school students. In the high school study, they found that 34% strongly agreed and 27% agreed with the question "Is the HIV-infected individual dangerous to others?". The answers were that 34 % strongly agreed and 27% of the students agreed that the HIV infected individual is dangerous to others. Girls seemed to show more stigma than boys but there seemed to be no large difference in the attitude of boys and girls (15). Our results suggested that HBV vaccination was incomplete or absent in 41% of nurses and 59% of doctors. Similarly disappointing rates were reported at 20% among doctors in Nigeria, 67.3 % in Santiago and 47.1% in Argentina. Similar results reported that the coverage at Benghazi was unsatisfactory considering the free cost and availability of the vaccine (14,16). Study of pre-exposure immunization is used for individuals who are at increased risk of hepatitis B because of their lifestyle or occupation. The study of pre-exposure immunization also showed that the hepatitis B doses may not be required in those with clear evidence of past exposure (17). Elzouki et al proposed that the vaccination against HBV is the preventative step in eliminating this infection and consequently the start of pre-exposure vaccination HBV to high risk groups free of charge in Libya began in 1999 (18). The results in this study similar to reports from Kenya and Jamaica with regards to PEP (13,19). The study by Ehmadi on the knowledge and attitude toward hepatitis B revealed good scores by the public, in comparison with our study that revealed the knowledge and attitude toward HIV/AIDS ranged from satisfactory to good. There are some misconceptions the need to be corrected, although there are good practices in regard to personal protective measures for infection control (20).

There are some notable limitations of the study. A convenience sampling may limit the generalization and the relatively small sample size may introduce selection bias. In conclusion, the results indicated satisfactory to good knowledge and attitudes and practices of HCWs towards HIV/AIDS and PEP. However, there is a need for more educational initiatives about HIV/AIDS for HCWs as a vital strategy to prevent occupational HIV transmission.

Training on risk management and individual responsibilities regarding safety can improve infection control. Employers should provide written guidelines and protocols of HIV PEP at the workplace. This can be facilitated by occupational health clinics in all health facilities to implement these strategies (21). Hepatitis B vaccination for high risk groups needs to be generalized and perhaps mandated.

Acknowledgement

We would like to thank Dr Osma Asaam, Dr Nadia Elgelani, Dr Amm-Saad Ali, Dr Elmotasm Elzouki, Dr Saweeker Mohammed for their help with data collection and all other doctors and nurses for participation.

References

1. Raphael JL and Judith SC. Post-exposure prophylaxis for HIV infection: *N Engl J Med* 2009;361:1768-75.
2. Almeda J, Allepuz A, Simon BG, Blasco JA, Esteve A, Casabona I et al. Barbara J. Non-occupational post-exposure HIV prophylaxis. Knowledge and practices among physicians and groups with risk behavior. *Med Clin (Barc)* 2003;121:321-6.
3. HIV and AIDS: information and guidance in the occupational setting, Health Protection Agency, London, UK (2008).
4. Rayes AA, El-Turki M, Maghur L, Abudher AA. National guidelines for the care HIV. Libyan National Center for Infectious Diseases Prevention and Control in collaboration with the European Union, 2009. Tripoli, Libya [Internet document available from www.nidcc.org.ly; accessed on July 7, 2013]
5. Vander Maaten GC, Davies J, Nyirenda M. HIV post-exposure prophylaxis programmes in the developed and developing world: *Int J STD AIDS* 2011;22:751-2.
6. O'Sullivan BG, Levy MH, Dolan KA, Post JJ, Barton SG, Dwyer DE, et al. Hepatitis C transmission and HIV post-exposure prophylaxis after needle- and syringe-sharing in Australian prisons. *Med J Aust* 2003;178:546-9.
7. Nguyen TA, Oosterhoff P, Pham YN, Hardon A, Wrigh P. Health workers' views on quality of prevention of mother-to-child transmission and postnatal care for HIV-infected women and their children. *Hum Resour Health* 2009;7:7-39.
8. Kyriazis I, Bobolas P, Rekliti M, Giolis A, Kalogirou T, Saridi M. Assessment of knowledge and attitudes of newly-qualified doctors towards AIDS infection. *IJCS* 2010;3:76-9.
9. Sandbaek A, Kragstrup J. Role of Danish general

- practitioners in AIDS prevention. *Scand J Prim Health Care* 2009;13:307-15.
10. Koha M, Al Najar F, Alserraj A, Rajab Z. prevalence of hepatitis B,C and HIV in patients presenting for surgery. *JMJ* 2008;8:137-9.
 11. World Health Organization. International Labour Office Code of Practice on HIV/AIDS. HIV/AIDS Department. International Labour Office. Geneva, Switerland 2003. [Interntet document available from www.who.org].
 12. Centers for Disease Control (CDC). Overview of HIV in Healthcare Settings. National Center for Preparedness, Detection, and Control of Infectious Diseases [Internet document available from: [http:// www.cdc.gov](http://www.cdc.gov)].
 13. Taegtmeier M, Suckling RM, Nguku PM, Meredith C, Kibaru J, Chakaya JM, et al. Working with risk: Occupational safety issues among healthcare workers in Kenya. *AIDS Care*. 2008;20:304-10.
 14. Elzouki AN, Bekhair S, Tumi A, Abdlmoti S, Arabi M. patients Comparison between HBe antigen - negative and HBe antigen- positive patients with chronic hepatitis B infection in Benghazi, Libya. *The Libyan J Infectious Diseases*. 2008;1:26-31.
 15. El-Gadi S, Abudher A, Sammud M. HIV-related knowledge and stigma among high school students in Libya. *International J of STD & AIDS* 2008;19:178-83.
 16. Toweir AA, Singh R. Hepatitis B vaccine up take and obstacles among medical staff and students. *JMJ* 2004;3:67-70.
 17. Cardo DM, Culver DH, Ciesielsk CA, Srivastav PU, Marcus R, Abiteboul J, et al. A case-control study of HIV seroconversion in health care workers after percutaneous exposure. *N Engl J Med* 1997;337:1485-90
 18. Elzouki AN. Hepatitis B infection in Libya. *The Libyan J of Infectious Diseases* 2008;2:20-6.
 19. Ministry of labour and social security. HIV/AIDS Survey presentation of findings knowledge attitudes, behavior and practices. Green paper on national work place policy on HIV/AIDS, Jamaica. Hope Enterprises. (2008): pp 18-21.
 20. Ehmadi MR, Gabri MH, Bisheya A, Abu-Kenda E. Exploring public knowledge and attitude towards hepatitis B infection in Tripoli, Libya. *Libyan J of infectious diseases*.2008;2:31-8
 21. Zaidi MA, Beshyah SA, Griffith R. Needle stick injuries: an overview of the size of the problem, prevention and management. *Ibnosina J Med BS*. 2010;2:53-61.