THE RISK OF HIV INFECTION DUE TO OCCUPATIONAL EXPOSURE AMONG HEALTH CARE WORKERS IN THE HOSPITALS OF KATHMANDU AND POKHARA; A HOSPITAL BASED STUDY.

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Summary

The incidence of HIV/AIDS is increasing in an alarming manner. There are more than 40 million.cases worldwide. In Nepal alone it is estimated that there are about 60,000 cases. Regardless of numerous activities of information, education and communication, there is still high level of social stigma and fear towards this disease. In near future management of these patients will be an integral part of the national health care system. There is reluctance or avoidance from the part of the health care workers in taking care of HIV/AIDS patients, mainly due to the fear of transmission. There is real, although low, risk of HIV transmission due to occupational exposure. This study will determine the risk of HIV infection due to occupational exposure in health care workers of hospitals of Kathmandu and Pokhara. This will be done by determining the incidence of events in which health workers are exposed to blood & other body fluids in the workplace, by verifying the availability of protective equipment and use of hygienic and personal protective practices by health workers, and by assessing the knowledge of the risks of HIV transmission in the workplace among health care workers. The results of the study will be important for plans and actions in improving the prevention and protection of health care workers from HIV/AIDS in health care settings. This should motivate the health care workers in giving proper care to HIV/AIDS patients, which is very important for the management of the disease.

Introduction

HIV/AIDS is a global health emergency and Nepal is no exclusion to this pandemic. According to Joint United Nations Programme on HIV/AIDS, as of end 2002, 42 million people are estimated to be living with HIV/AIDS worldwide. An estimated 5 million people acquired the HIV in 2002. During 2002, AIDS caused the death of an estimated 3.1 million people worldwide. There are 2665 cases of HIV/AIDS recorded in Nepal as of January 31, 2003 (National Centre of AIDS and STD Control). But it is estimated that there are about 60,000 cases of HIV/AIDS in Nepal (Thus there is an alarming increase of this deadly disease. Moreover, this may just be the tip of an iceberg as most of the HIV patients do not come to medical attention due to the social stigma and lack of the possibility of health care in our socio-economic context. This is a disease which destroys the immune system, debilitating the individual, with a fatal outcome. It highly compromises the quality of life of the patient. As this disease affects mostly the younger generation, that of the productive age, it has considerable negative impact on the productivity of the nation. Previously the disease was more confined to the high risk groups like intravenous drug users and commercial sex workers, but nowdays other ways of transmission like heterosexual, mother to the child and occupational modes have been more commonly reported. Hence no one is immune to this disease in contrary to the belief that it is more confined to certain categories.

HIV/AIDS is already a serious health problem in Nepal. Due to the social stigma these individuals rarely come to the hospitals and other public health services. Those who come or those who are forced to come due to one of the many serious complications of the disease are either turned away or segregated. Although there are many HIV/AIDS cases in Nepal it is still rare to see these patients in the hospitals or nursing homes. Regardless of numerous information, education and communication programmes, there is still a high level of social stigma and fear towards this disease.

In near future there will be a burst of HIV/AIDS cases in the hospitals. It is very important that we prepare in the best possible way for this. The threat that this disease poses to the already precarious health conditions and health care system of our country is alarming and the consequences may be catastrophic. Unfortunately an affordable cure seems to be still a long way to come.

.Statement of the problem

Management of HIV/AIDS patients will be an important part of the health care system in near future. Nowdays these individuals are not receiving proper health care from the public and private hospitals and health care centers. There are incidents that when the HIV status of the patient is known he/she is discharged from the hospital. The health care takers are reluctant to touch the HIV patients, let alone giving care. There is no maintenance of confidentiality of the HIV status of the patient. There is no proper legislation to protect the right of the HIV/AIDS patients.

In this scenario it is important to explore why health care workers are reluctant to provide health care to the HIV/AIDS patients. Although there are many activities towards informing and educating about HIV/AIDS, there is still high level of stigma towards the disease. This is due to the fact that it mainly transmits by sexual contact and mainly affects the high risk groups. But this pattern is already changing. The other important reason is the fear of contracting this disease, which still does not have a cure. The stigma and the fear towards disease seems to be more pronounced in those who have the possibility in coming in contact with the HIV/AIDS patients more frequently, i.e., the health care workers.

There is a real, although not high, risk of HIV transmission to the health care workers while giving care to the HIV/AIDS patients. Hence the fear, towards contracting this disease, of the health care workers is understandable. Unfortunately this has resulted in reluctance or avoidance of providing care to HIV/AIDS patients. This is a big drawback for the management of HIV/AIDS.

This study focuses the problem of the risk of transmission of HIV/AIDS due to the occupational exposure in health care workers. The actual risk of transmission to the health care workers depends on the knowledge about HIV/AIDS, the availability of protective equipment and their use, the frequency of events in which the health care worker is exposed to the blood and other body fluids of the patient, and the prevalence of HIV/AIDS.

Literature review

There is a real, although not high, risk of HIV transmission due to occupational exposure (Ippolito G et al, 1993). The Occupational Safety and Health Administration of USA has made a determination that employees face a significant health risk as the result of occupational exposure to blood and other potentially infectious materials as they may contain blood borne pathogens including HIV.

The transmission of HIV in the work place from patients to health workers or vice versa has been frequently reported. An expanding

body of evidence challenges the conventional hypothesis that sexual transmission is responsible for more than 90% of adult HIV infections in Africa. Many studies report HIV infections in African adults with no sexual exposure to HIV and in children with HIV-negative mothers. The possibility of HIV transmission through unsafe medical care may be an important factor in HIV epidemic (Gisselquist et al, 2002). In a study conducted in Nigeria 8.1% of all laboratory workers tested positive for HIV (Ojule AC et al, 2001).

Percutaneous exposures, prick and splash, are very frequent in health care practice.In the United States approximately 50,000 percutaneous exposures occur yearly among health care workers. Of these approximately 5000 involve exposures to blood that is known to be infected with HIV. The risk of transmission after percutaneous exposure to HIV tainted blood has been estimated to be 0.3% (Aboulafia DM, 1998) According to a study done in Africa by Netherlands Institute of Mental Health and Addiction 61% of the Dutch medics reported percutaneous exposures during an average stay of 21 months (de Graaf R et al, 1998).

Rationale/Justification

Management of HIV/AIDS patients is an important aspect in the prevention and control of HIV/AIDS. As the incidence of HIV/AIDS is rapidly rising, HIV/AIDS patients will occupy a good part of the hospital beds in near future. Thus HIV/AIDS care will be an integral part of our national health care system. Information, education and communication programmes are important in the prevention of the disease. Numerous of these activities are going on. But little seems to be done towards the management, hence the containment of the disease. Without containment of the disease an effective prevention and control of the disease will be ineffective.

Health care worker's perception of personal risk is a crucial yet often unacknowledged component of the fight against AIDS. Lack of attention to this issue is seriously compromising initiatives designed to facilitate the health worker's participation in AIDS care. In this study, we focus on the very important aspect of management of HIV/AIDS patients, i.e., provision of health care by the health care workers. In our context , the health care workers are reluctant or avoid giving health care to HIV/AIDS patients. In part this may due to the fact that there could be lack of knowledge regarding HIV/AIDS. But the principal reason seems to be the fear of contracting the deadly disease while giving care to the HIV/AIDS patients. This risk although significant, is low according to various studies.

No study of this type has been conducted in Nepal. This is the first study of it's kind to be conducted in Nepal with the objective of determining the risk of HIV transmission due to occupational exposure.

Knowing the actual risk would be helpful in formulating plans and actions in improving the prevention and protection of health care workers from HIV/AIDS in health care settings. This should motivate the health care workers in giving good health care to HIV/AIDS patients, which in turn will contribute significantly in the prevention and control of HIV/AIDS.

Objectives

General

To determine the risk of HIV infection due to occupational exposure in health care workers in the hospitals of Kathmandu and Pokhara.

Specific

To determine the incidence of events in which health care workers are exposed to blood & other body fluids of the patients in the workplace.

To verify the availability of protective equipment and use of hygienic and personal protective practices by health care workers.

To assess the knowledge of the risks of HIV transmission in the workplace among health workers.

Research Design and Methodology

Research Method - Quantitative

Study variables - risk of HIV infection
- occupational exposure
- health care workers

Type of study – Cross sectional descriptive study

Study site and its justification

The study sites are the Teaching hospital (TUTH), Bir hospital (BH), Western regional hospital (WRH) and B&B hospital (BB). The major part of the study will be done in the Teaching Hospital and Bir Hospital of Kathmandu valley. These are the largest tertiary referral hospitals of Nepal, providing important part of the health service to the country. With the aim of obtaining datas from a hospital out side Kathmandu valley, Western regional hospital has been chosen as this is one of the largest hospital out side Kathmandu valley, providing health care to the large part of the western region. With the aim of including private health care sector, B & B hospital has been included in the study, because this is one of the largest private hospital with very high flow of surgical patients.This allows a comparative study between tertiary national hospitals, a regional hospital and a private hospital.

Target population

The study population are the health care workers of the hospitals included in study, present at the time of the study. Health care workers comprises doctors, nurses and laboratory workers.

Sampling method

- probability sampling - simple random sampling

Sample size

- 10% (or more) of the health care workers present at the time of sampling

Tools and techniques for data collection

The datas will be collected through questionnaires and observations. Health care worker's knowledge about occupational risks of HIV transmission will be assessed through a self administered structured questionnaire. A structured questionnaire will be used to record the incidence of health care workers being pricked and splashed during the previous 24hrs., week and month. The risk of HIV infection will be calculated on the basis of the number of exposure incidents per year, the risk of seroconversion per incident and the HIV prevalence. Wards , out patient departments, operation theatres and laboratories will be visited to observe the availability of protective equipment and use of hygienic and personel protective practices by health workers.

Pre-testing the data collection tools

The questionnaire will be pretested in the Teaching hospital at the beginning of the study to verify if they are simple and friendly to the health worker, and if they provide necessary information for the study.

Questionnaire I - Incidence of events in which health workers are exposed to blood and body fluids of the patients in the workplace.

Hospital:

Healthworker code no.

I. Demographics:

1.. level of medical work:

1. doctor 1. house officer 1. medical dept.
2. resident 2. general surgery 3. Orthopedics 4. dental surgery
3. consultant 5. gynae-obs 6. others

2. nurse 1. ANM 1. medical dept. 3. lab worker
2. nurse(certificate level) 2. gen. Surgery 3. ortho. 4. dental surg. 1. microbiology
3. sister (BN level) 5. gynae-obs 6.others 2. biochemistry
3. pathology

2. age ..... 3. gender 1. M 2. F

II. Type of incident : prick

1. time of the incident
   1. within previous 24hrs 2. within previous week 3.within previous month
2. type of device responsible
   1. syringe needle 2. surgical needle
   3. pointed/sharp instruments/objects: 1. surgical blade 2. scissors 3. hooks 4. glass pieces 5. metal pieces
   6. others 7. unknown
3. procedure during which the incident occurred:
   1. surgical procedure/operation:
      1. general surgery 2. orthopedics 3.. ob/gyn 4.. dentistry 5. others
   2. injection 3. drawing of blood 4. putting IV line 5. dressing 6. cleaning 7..others 8.. unknown
4. type of fluid to which the health worker is exposed:
   1. blood 2. cerebrospinal fluid 3. synovial fluid 4. pleural fluid 5. peritonial fluid 6. pericardial fluid
   7. amniotic fluid 8. semen 9. vaginal fluid 10. saliva 11. sweat 12. breast milk 13. urine
   14. feces. 15. others 16. unknown
5. source of the body fluid:
   1. sero-positive for HIV: 1. HIV positive 2. AIDS
   2. sero-negative for HIV 3. sero-status for HIV not known
   4. risk groups: 1. prostitutes 2. clients of prostitutes 3. drug users 4. homosexuals 5. blood transfusion patiens
   6. others 7. unknown
6. depth of the prick: 1. superficial (up to the dermis) 2. deep (below the dermis)
7. no of incidents 1 2 3 4 5 >5

III. Type of incident: cut

1. time of the incident
   1. within previous 24hrs 2. within previous week 3.within previous month
2. type of device responsible
   1. syringe needle 2. surgical needle
   3. pointed/sharp instruments/objects: 1. surgical blade 2. scissors 3. hooks 4. glass pieces 5. metal pieces
   6. others 7. unknown
3. procedure during which the incident occurred:
   1. surgical procedure/operation:
      1. general surgery 2. orthopedics 3.. ob/gyn 4.. dentistry 5. others
   2. injection 3. drawing of blood 4. putting IV line 5. dressing 6. cleaning 7.others 8. unknown
4. type of fluid to which the health worker is exposed:

1. blood 2. cerebrospinal fluid 3. synovial fluid 4. pleural fluid 5. peritonial fluid 6. pericardial fluid
8. amniotic fluid 8. semen 9. vaginal fluid 10. saliva 11. sweat 12. breast milk 13. urine
15. feces. 15. others 16. unknown

5. source of the body fluid:
2. sero-positive for HIV: 1. HIV positive 2. AIDS
3. sero-negative for HIV 3. sero-status for HIV not known
4. risk groups: 1. prostitutes 2. clients of prostitutes 3. drug users 4. homosexuals 5. blood transfusion patiens
6. others 7. unknown

6. depth of the prick: 1. superficial (up to the dermis) 2. deep (below the dermis)
7. no of incidents 1 2 3 4 5 >5

IV. Type of incident: splash

1. time of the incident
1. within previous 24hrs 2. within previous week 3.within previous month

2 . procedure during which the incident occurred:
1. surgical procedure/operation:
1. general surgery 2. orthopedics 3.. ob/gyn 4.. dentistry 5. others
2. injection 3. drawing of blood 4. putting IV line 5. dressing 6. cleaning 7.taking swabs/samples 8. others
9. unknown

3. type of fluid to which the health worker is exposed:
1. blood 2. cerebrospinal fluid 3. synovial fluid 4. pleural fluid 5. peritonial fluid 6. pericardial fluid
7. amniotic fluid 8. semen 9. vaginal fluid 10. saliva 11. sweat 12. breast milk 13. urine
14. feces. 15. others 16. unknown

4. volume of the fluid in contact with skin/mucous membrane:
1. few drops 2. < 5cc 3. >5cc 4. unknown

5. body surface involved: 1. skin 2. mucous membrane

6. condition of skin./mucous membrane of the health worker at the time of exposure:
1. abraded 2. with skin/mucous membrane lesions 3. with cuts/wounds 4. intact

7. duration of contact : 1. few seconds 2. few minutes 3. > 5 mins.

8.. source of the body fluid:
1. sero-positive for HIV: 1. HIV positive 2. AIDS
2. sero-negative for HIV 3. sero-status for HIV not known
4. risk groups: 1. prostitutes 2. clients of prostitutes 3. drug users 4. homosexuals 5. blood transfusion patients
6.others 7. unknown

9. no of splashes 1 2 3 4 5 >5

V. Type of incident: touch

1. time of the incident
1. within previous 24hrs 2. within previous week 3.within previous month

2 . procedure during which the incident occurred:
1. surgical procedure/operation:
1. general surgery 2. orthopedics 3.. ob/gyn 4.. dentistry 5. others
2. injection 3. drawing of blood 4. putting IV line 5. dressing 6. cleaning 7. taking swabs/samples 8. others
9. unknown

3. type of fluid to which the health worker is exposed:
1. blood 2. cerebrospinal fluid 3. synovial fluid 4. pleural fluid 5. peritonial fluid 6. pericardial fluid
7. amniotic fluid 8. semen 9. vaginal fluid 10. saliva 11. sweat 12. breast milk 13. urine
15. feces. 15. others 16. unknown

4. volume of the fluid in contact with skin/mucous membrane:
1. few drops 2. < 5cc 3. >5cc 4. unknown

5. body surface involved: 1. skin 2. mucous membrane

6. condition of skin./mucous membrane of the health worker at the time of exposure:
   1. abraded 2. with skin/mucous membrane lesions 3. with cuts/wounds 4. intact
7. duration of contact : 1. few seconds 2. few minutes 3. > 5 mins.
8. source of the body fluid:
   1. sero-positive for HIV: 1. HIV positive 2. AIDS
   2. sero-negative for HIV 3. sero-status for HIV not known
   4. risk groups: 1. prostitutes 2. clients of prostitutes 3. drug users 4. homosexuals 5. blood transfusion patients
   6. others 7. unknown

9. no of splashes 1 2 3 4 5 >5

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Questionnaire II: Knowledge of the risks of HIV transmission in the workplace among health workers.

Hospital:
Health worker code no.:

Dear health care taker,

We would be glad if you can spare few moments to fill the following questionnaire, which aims to know the understanding of the healthworker about the risks of HIV transmission in the workplace.

Thank you in advance for your cooperation.

1. Demographics:
   1. level of medical work:
      1. doctor 1. house officer 1. medical dept.
         2. resident 2. general surgery 3. Orthopedics 4. dentistry
         3. consultant 5. gynae-obs 6. others
      2. nurse 1. ANM 1. medical dept.
         2. nurse(certificate level) 2. gen. Surgery 3. ortho. 4. dentistry
         3. sister (BN level) 5. gynae-obs 6. others
      3. lab worker 1. microbiology
         2. biochemistry
         3. pathology
   2. age .....
   3. gender 1. M 2. F
2. What is the approximate no. of people living with HIV/AIDS in the world?
   1. 20 million 2. 30 million 3. 40 million
3. What is the estimated no of HIV/AIDS cases in Nepal?
   1. 20000 2. 40000 3. 60000
4. .How do you get informed about HIV/AIDS? Through
   1. medical texts 5. signboards 9. medical journals
   2. newspapers 6. magazines 10. booklets/pamphlets
   3. co-workers 7. radio/TV 11. friends
   4. workshops 8. internet 12. Others
5. Is HIV/AIDS curable?
   1. yes 2. no 3. do not know
6. Have you taken care of any HIV/AIDS patient?
   1. yes 2. no 3. do not know
7. Which of the following are high risk groups for HIV/AIDS?
   1. prostitutes 5. health workers
   2. clients of prostitutes 6. homosexuals
   3. drug users 7. blood transfusion patients
   4. young people
8. HIV has been shown to be transmitted through: (tick any of the following)
   1. blood 4. semen 7. vaginal fluid
   2. saliva 5. sweat 8. breast milk
   3. urine 6. feces
9. HIV can be transmitted by: (tick any of the following)
   1. unprotected sexual intercourse 5. blood transfusion
   2. exchange of syringes 6. oral sex

3. kissing
4. shaking hands
7. hugging

10 What are the most common routes of transmission in Nepal?
1. unprotected sexual intercourse
2. exchange of syringes
3. kissing
4. shaking hands
5. blood transfusion
6. oral sex
7. hugging

11 .When taking care of HIV/AIDS patients gloves have to be worn.
1. yes 2. no 3. do not know

12 ..When operating an HIV patient double gloves, mask & eye protection have to be worn.
1. agree 2. disagree 3. do not know

13 .After using a syringe in HIV patient, would you recap the needle before throwing it?
1. yes 2. no 3. do not know

14 .Do you think the general precautive measures against infections that you are taking during work is
1. poor 2. good 3. excellent

15 .Have you been to any workshops dealing with protection against infections in health care settings?
1. yes 2. no 3. do not know

16.The chances of HIV transmission in the health care set up is
1. low 2. high 3. do not know

17.Which are the most important risk factors in the transmission of HIV in the workplace? (tick any of the following)
1. prevalence of HIV patients
2. lack of protective equipment
3. inadequate personal protective practices by the health worker
4. inadequate knowledge of the risks of HIV transmission in the workplace

18. What are the most likely ways of HIV transmission from a HIV patient to the health worker?
1. by prick of needles used in HIV patients
2. by cuts of instruments/devices used in HIV patients
3. by splash of blood from HIV patients
4. by splash of other body fluids from HIV patients
5. by touch of blood from HIV patients
6. by touch of other body fluids from HIV patients
7. by bite from HIV patients
8. by touching the HIV patient

19. Due to fear of contracting AIDS, the health care worker may avoid giving health care to the HIV patients.
1. agree 2. disagree 3. do not know

20. Why are HIV/AIDS patients having difficulty in receiving health care?(tick any of the following)
1. lack of health care facilities

2. reluctance of the HIV/AIDS patients to come to the health centers
3. social stigma towards the disease
4. fear of transmission to the health care workers
5. lack of knowledge about the disease

THANK YOU VERY MUCH

Observation check list - Observation of the availability of protective equipment and the use of hygienic and personal protective practices by health care workers.

Wards, out patient departments, operation theatres and laboratories will be visited and the availability and use of the following items will be observed.

		Y(yes)	N(no)
1. gloves	available		
	use	Y	N
2.mask	available	Y	N
	use	Y	N
3.white coat	available	Y	N
	use	Y	N
4.gown	available	Y	N
	use	Y	N
5.washing facilities	available	Y	N
	use	Y	N
6. soap	available	Y	N
	use	Y	N
7antiseptics	available	Y	N
	use	Y	N
8.waste basket	available	Y	N
	use	Y	N
9.syringe disposal container			
	available	Y	N
	use	Y	N
10. waste disposal facilities			
	available	Y	N
	use	Y	N
11. eye protection	available	Y	N
	use	Y	N

Dissemination and utilization of the research findings

This is the first study of it's kind, which addresses the problem of occupational exposure to HIV in health care workers in Nepal. This study will determine the actual risk of HIV due to occupational exposure in a Nepalese hospital setting. The results will be disseminated to the health care workers so that they are aware of the actual risk and accordingly take the necessary preventive measures. The results will also be disseminated to the health policy makers for advocacy for interventions towards reducing the risk of HIV transmission in the health care settings to the health care workers. These measures will help in changing the attitude of the health care worker, and will provide indiscriminate health care to the HIV/AIDS patients. This in turn is very important for the patient and for the good management of the disease which is fundamental for the prevention and the control of this severe disease, particularly in a poor country like Nepal.

Ethical Consideration

Human participants, i.e., health care workers are required as interviewees in the study. The questionnaires do not contain any questions in regard to social, cultural, moral, racial and professional values. The health care worker will be explained about the study and it's objectives, and a verbal consent will be taken before the interview.

Recruitment & training of the research assistants:

In the third week of July, 2003, two young interns, Dr Arjun Shrestha & Dr. Basanta Pathak were identified and recruited as research assistants. A through orientation regarding all aspects of the project was given. The clinico-epidemiological features of HIV/AIDS, and the psychological, social & economical implications of the disease were explained, with particular emphasis on Nepal and South-East Asia. The impact of HIV/AIDS in the national health care system was discussed. Particular emphasis was given on healthcre worker's attitude towards HIV/AIDS patients, their fear of contracting the disease in the workplace and their reluctance in giving care to these patients.

A brief introduction regarding quantitative research was given. A very detailed presentation regarding the methodology and time table of the study was made. Both the questionnaires and the observation checklist were explained in detail to the research assistants.

Pretesting of the questionnaires:

The questionnaires were pretested among few healthworkers at the beginning of the study, and were found to be simple, friendly & provided necessary informations.

Data collection & analysis:

The healthworkers were explained about the objectives and the rationale of the study and a verbal consent was taken at the beginning of the interview. The healthworkers were interviewed using a structured questionnaire (I) regarding the incidence of events in which healthworkers are exposed to blood and body fluids of the patients in the workplace. The knowledge of the risks of HIV transmission in the workplace among healthworkers was assessed with a self-administered questionnaire (II) completed by the healthworkers.

Altogether 200 healthworkers were interviewed. The interviews were started from the healthworkers of the Teaching Hospital, where 100 healthworkers were interviewed. This is more than 15% of the healthworkers present during the period of the study in the Teaching Hospital. Subsequently 59 health workers from Bir Hospital were interviewed, which is more than 10% of the healthworkers present at the time of the study. Then 19 health workers from Western Regional Hospital, Pokhara and 22 from B&B Hospital were interviewed. The observation of the availability and use of protective equipment was done in the various OPDs & wards of the Teaching Hospital.

All datas were recorded and analised using SPSS 10 WINDOWS programme.

Results

Altogether 200 healthworkers were interviewed. Among them 41.5% were doctors, 50% were nurses & 8.5% were lab workers. The females were 58% and the males 42%. The youngest was 19yrs., the oldest 54 and the mean age 32±7. The majority of the doctors were residents - 45.8%, followed by house officers - 33.7% and then consultants- 20.5%.Among the nursing staff, 72% were nurses, 17% ANM & 11% sisters. Regarding the departmental representations, 22.9% of the doctors were from the medical department, 16% general surgery, 7% gynecology and obstetrics & remaining from the other departments, while

33.7% of the nurses were from the medical department, 23.2 general surgery, 15% gynecology and obstetrics and remaining from other departments. 29.4% of the lab workers were from the microbiology department, 35.3% from biochemistry & 35.3% from pathology. Of the all healthworkers interviewed, 50%(100) were from the TUTH, 29.5% (59) from BH, 9.5% (19) WRH and 11% (22) from BB.

Questionnaire I – Incidence of events in which healthworkers are exposed to blood and body fluids of the patients in the workplace.

Altogether 79% (158) of the healthworkers experienced one or more of 4 types of exposures – prick, cut, splash & touch – to blood and body fluids of patients in the work place. 80.7% (67) of doctors, 78% (78) of nurses and 76.5% (13) of lab workers had one or more of exposures. In TUTH 85% of the healthworkers, in BH 64.4%, 78.9% in WRH & 90% in BB were exposed.

A total of 54 (27%) of the healthworkers (14% doctors, 11.5% nurses & 1.5% lab workers) were pricked , with total number of pricks being 106. Regarding the timing 88.9% were pricked within the previous month, 3.7% previous week and 7.4% in 24hours. The HIV sierostatus of the body fluids was unknown in 72.2%, HIV positive in 2% & negative in 4%. The prick was due to syringe needle in 55.5% , surgical needle 29.6%, surgical blade 7%, metal pieces 3.7%, glass pieces, hooks & scissors in 1.9% and others in 3.7% cases. Regarding the procedures in which the prick occurred, 48.1% of pricks occurred during surgical procedures/operations, 25.9% during injections, 18.5% during drawing of blood, 16.7% when putting IV line, 5.6% dressing, 1.9% cleaning and 16.7% others. Regarding the type of fluid to which the healthworker was exposed , 94.4% were exposed to blood, 3.7% to CSF, 1.9% to pleural fluid, amniotic fluid, saliva & urine, and 3.7% to others.

A total of 18 (9%) of healthworkers (4% doctors, 4.5%nurses & 0.5% lab workers) had cut/s, with total number of cuts being 28. Regarding the timing, 61.1% of the cuts were within previous month, 16.7% previous week and 22.2% in 24 hours. In 77.8% the HIV status was not known, while in 16.7% it was negative. In 44.4% of the cases the cuts were due to glasss pieces, in 16.7% metal pieces, in 11.1% syringe needle, in 5.6% surgical needle, surgical blade, hooks, and others. Regarding the procedures in which the cuts occurred, 44.4% occurred during surgical procedures/operations, 5.6% during injection, drawing of blood, and dressing, and 38.9% in other types of procedures. Regarding the fluid to which the health worker was exposed, 94.4% were exposed to blood and 5.6% to urine.

Fiftythree percent (106) of the healthworkers (22%doctors, 27% nurses & 4% lab workers) had experience of splash, with total number of splashes being 332. Within previous month 80.2% of splashes occurred, 9.4% within previous week and 10.4% in 24 hours. The sierostatus of the

source of body fluid was unknown in 77.7% & negative in 19.8%. The condition of the skin was abraded in 6.6% of the cases. 33.9% of the splashes occurred during surgical procedures/operations, 36.8% when putting iv line, 29.2% when drawing of blood, 12.3% when dressing, 9.4% when taking swabs, 4.7% when cleaning, 2.8% during injection and 23.6% other procedures. Regarding the fluid to which the healthworker was exposed, 83.9% were exposed to blood, 13.2% to urine, 12.3% to amniotic fluid, 9.4% to vaginal fluid, 6.6% to saliva,5.7% to breast milk, 3.8% to peritoneal fluid, 2.8% to sweat, 0.9% to pleural fluid, pericardial fluid and semen and 4.7% to other types of fluids.

Thirtysix and half percent (73) of the healthworkers (14% doctors, 17.5% nurses, 5% lab workers) happen to touch one or more of body fluids, with the total number of touches being 279. 79.5 % of the touches occurred within the previous month, 17.8% previous week & 2.7% within 24 hours. In 75.3% the HIV sierostatus was unknown, in 13.7% it was negative & in 6.8% it was positive. 31.5% of touches occurred when putting iv line, 27.4% when drawing blood, 24.7% during surgical procedures/operations, 21.9% when dressing, 16.4% when taking swabs, 9.6% cleaning, 6.8% injection and 19.2% others. Regarding the fluid to which the healthworker was exposed, 82.2 % were exposed to blood, 15% to vaginal fluid, 12.3% to amniotic fluid and urine, 10.9% to breast milk, 8.2% to sweat and saliva, 5.5% to CSF, pleural fluid and peritoneal fluid, and 2.7% synovial fluid.

The total no of pricks and cuts, in the period of 1 month, in 200 health workers = 106+28 = 134.

Prick&/cut per healthworker per month = 134/200 = 0.67

Prick&/cut per healthworker per year = 0.67 x 12 = 8

HIV prevalence in the general population = 0.3%

Risk of siero-conversion after percutaneous exposure = 0.25%

Risk of HIV transmission due to occupational exposure for a healthworker in the period of one year =

Prick&/or cut per healthworker per year x
Risk of sieroconversion after percutaneous exposure x
HIV prevalence in the general population

= 8 x 0.25/100 x 0.3/100 = 0.6/10000 = 0.006%= 6/ 100000

The highest risk of HIV transmission due to occupational exposure is in the case of percutaneous exposure. There is almost no risk due to splash and touch. There is very very low risk of transmission if the area exposed to splash or touch is mucous membrane or abraded.

Questionnaire II – Knowledge of the risks of HIV transmission in the workplace among healthworkers.

About one third (35.7%) of the health workers (48.8% of doctors, 25.8% of nurses & 29.4 of the labworkers)– knew the total number of HIV/AIDS in the world, while 30.2% (39.8% doctors, 25.3% nurses & 11.8% lab workers) answered correctly the estimated number of HIV/AIDS in Nepal.

The majority, 88.5%, of the healthworkers said that HIV is not curable, while 8.5% (12% doctors, 5% nurses & 11.8% lab workers) said it was curable. Seventy nine and half % (78.3% doctors, 85%nurses & 9% lab workers) of the healthworkers have taken care of HIV/AIDS patients.

Regarding the method of being informed about HIV/AIDS, 78.7% informed about HIV/AIDS from medical texts, 71.6% from newspapers, 66% radio/TV & 63.5% medical journals.

The high risk groups for HIV/AIDS are prostitutes according to 89.4% of healthworkers, drug users according to 85.9%, clients of prostitutes 73.7%, healthworkers 65.7%, homosexual and blood transfusion patients according to 63% of the healthworkers. Ninetynine and half % of healthworkers thought that HIV transmitted through blood, 80% semen, 79.5% vaginal fluid, 27% breast milk, 7.5 sweat, 3.5 urine and 2.5% feces. Regarding the modalities of transmission 97.5% said unprotected sexual intercourse, 88.5 exchange of syringes, 84.5% blood transfusion, 41.5% oral sex, 10% kissing & 1% hugging and shaking hands.The most common modalities of transmission in Nepal are unprotected sexual intercourse according to 95.5%, exchange of syringes 79.5%, blood transfusion 53.5%, oral sex 10.5% and kissing according to 3.5% of the healthworkers.

When taking care of HIV/AIDS patients 90% said gloves have to be worn, while 9.5% said that it is not necessary. Of all the healthworkers 91.5% agreed that double gloves, mask and eye protection have to used while taking care (operating) of HIV/AIDS patients and 8% disagreed. After using a syringe, 52% of the healthworkers (56% doctors, 36% nurses & 12% lab workers) said that it is correct to recapp the needle while 48% said it is not. According to 66% of the healthworkers, the general precautive measures against infections that they are taking during work is good, for 27.5% it is poor & for the remaining 5% it is excellent. More than half, 51.5% (45.1% doctors, 54.1% nurses & 76.5% lab workers), of the healthworkers have been to workshops dealing with protection against infections in healthcare settings, while 46.5% have not.

The chances of HIV transmission in the healthcare setup is high according to 66.5% of the healthcare workers & low according to 31.5%. Regarding the most important risk factors in the transmission of HIV in the workplace 64.5% said inadequate personal protective practices,

56.5% lack of protective equipment, 44% inadequate knowledge of the risks of HIV & 41.5% said prevalence of HIV patients. According to 95.5% of the healthworkers the most likely way of HIV transmission from a HIV patient to the healthworker is prick, 81.4% cut, 47.2% splash of blood, 30.2% splash of body fluids, 24.6% bite, 23.6% touch of blood, 14.1% touch of other body fluid & 1.5% by touching the HIV patient.

Due to fear of contracting AIDS, the health worker may avoid giving healthcare to HIV patients, according to 38.2% (48.2% doctors, 30.3% nurses & 35.3% lab workers) of the healthworkers while 60.3% disagree.

HIV/AIDS patients are having difficulty in receiving healthcare due to social stigma towards the disease according to 79.4%, lack of knowledge about the disease 56.8%, lack of healthcare facilities 54.8%, reluctance of HIV/AIDS patients to come to the healthcare centres 53.8% and fear of transmission to the healthcare workers 29.1%.

To verify the availability of protective equipment and use of hygienic and personal protective practices by healthcare workers.

The observation regarding the availability of protective equipment and use of hygienic and personal protective practices by healthcare workers was done in various OPDs and wards of the Teaching Hospital. The wards and OPDs observed were of general medicine, general surgery, gynecology and obstetrics, orthopedics, ENT, dentistry, dermatology, emergency along with the pathology lab & operation theatres. Gloves were available in all OPD/ward/OTs and were used in 88% of these places.The masks were available in the procedure rooms of gynecology & obstetrics & ENT department, dental OPD, emergency and the pathology lab. White coats were available in 94% of places and used in 88% of them. The gown was available and used in just one of the OTs. Washing facilities, soap, antiseptics, waste basket, waste disposal facilities were available and used in all places. Syringe disposal container was available and used in 88% of the places. Eye protection was available and used only in the OT.

Discussion and coclusions

HIV/AIDS is a global health emergency and Nepal is no exclusion to this pandemic. With estimated cases of more than 60,000 , this disease poses a big threat to the already precarious health conditions and healthcare system of Nepal. In near future there will be a burst of

HIV/AIDS patients in the hospitals. It is very important that we prepare in the best possible way for this.

Management of HIV/AIDS is crucial in the prevention and containment of the disease & will be an important part of the national healthcare system in near future. Nowdays HIV/AIDS patients are facing difficulty in receiving healthcare and are stigmatized in the hospitals, nursing homes and other healthcare settings. There is reluctance to provide healthcare from the part of the healthcare workers due to lack of knowledge, stigma & above all fear of transmission. This is a big drawback for the management of HIV/AIDS.

There is a real, although not high, risk of HIV transmission due to occupational exposure. The actual risk of transmission to the healthcare workers depends on the knowledge about HIV/AIDS, the availability of protective equipment & their use, the frequency of events in which the healthcare worker is exposed to the blood and other body fluids of the patients, and the prevalence of HIV/AIDS.

Healthcare worker's perception of personal risk is a crucial yet often unacknowledged component of the fight against AIDS. Lack of attention of this issue is seriously compromising initiatives designed to facilitate the healthworker's participation in AIDS care.

This study has focused on the risk of HIV transmission due to occupational exposure in the hospital setting of Nepal. Knowing the actual risk would be helpful in formulating plans and actions in improving the prevention and protection of healthcare workers from HIV/AIDS in healthcare settings. This should motivate the healthcare workers in giving good healthcare to HIV/AIDS patients, which in turn will contribute significantly in the prevention and control of HIV/AIDS.

More than 79% of the healthworkers were exposed to blood or body fluids of the patients by prick, cut, splash & touch within the period of 1 month in the hospitals where they worked. So this kind of exposure is very common. The risk of HIV transmission per healthworker per year due to percutaneous exposure ,i.e., prick and cut is 0.006% or 6/100000. The actual risk should be higher as the hospital prevalence of HIV is higher than general prevalence. As the prevalence of HIV/AIDS increases, the hospital prevalence will also increase and the risk will be much more greater in near future. So there is real risk of HIV transmission in the workplace, although at the moment, the risk is low. The risk was highest in the surgical departments – general surgery, orthopedics, gynecology & dentistry.

In most cases the HIV sierostatus of the patients were not known, so universal precaution is most important for the prevention. Percutaneous exposures occurred most frequently during surgical procedures/operations, followed by injections & drawing of blood. Surgeons followed by the nurses were the most vulnerable. Percutaneous exposures were caused mainly by syringe needles, glass pieces & surgical blades.

The healthworkers are not aware of the magnitude of HIV problems, as only one third of the healthworkers knew the estimated number of HIV/AIDS patients worldwide & Nepal. There seem to be lack of basic knowledge about the disease in some healthworkers ,as one out of ten healthworkers did not know that HIV is still incurable.

The majority of healthworkers, 8 out of 10, have taken care of HIV/AIDS patients. This shows that, more or less, every healthworker, has to take care of HIV/AIDS. If we consider 75% as the necessary level of adequacy, the knowledge regarding transmission, e.s., high risk groups, modalities of transmission & body fluids through which HIV transmits, can be considered adequate. The knowledge regarding protection such as using gloves, double gloves, mask and eye protection was adequate. Only half of the healthworkers have been to workshops dealing with protection against infections in healthcare settings, while nearly one third were convinced that the general precautive measures against infections that they are taking during work is poor. 64.5% of the healthworkers said that inadequate personal protective practices is the most important risk factor in the transmission of HIV in the workplace. Training and workshops for healthworkers regarding universal protection & application in the healthcare setting is necessary & if possible made obligatory.

Four out of ten healthworkers agree that the healthworkers perception of fear of contracting AIDS is an important factor, due to which the healthcare worker may avoid giving healthcare. This further validates the fact that fear of transmission is an important factor.

The availability of protective equipment and use of hygienic and personal protective practices seem to be adequate in most cases. The use of masks & eye protection has to be stressed, while syringe disposal container should be available in all OPDs, wards & OTs. It is advisable to use gloves for patient examination.

In conclusion, for the effective control and prevention of HIV/AIDS, interventions are necessary in every aspect of the disease and proper management of the disease is one of the most important. There is a real although low, risk of HIV transmission in healthcare settings. Hence the healthworker's perception of personal risk of HIV transmission has to be addressed with following interventions:

- Workshops and training to all healthworkers regarding universal precaution
- Develop guidelines for the management of healthcare workers after exposure.
- Post exposure prophylaxis and insurance coverage.
- Fear and stigma reduction activities.

Only with the whole hearted participation of the healthworkers, effective management of HIV/AIDS will be possible.

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