

ATTITUDES AND PRACTICES OF NURSING STUDENTS CONFRONTED WITH BLOOD EXPOSURE
ACCIDENTS IN ABIDJAN

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Abstract

Background: Blood Exposure Accidents (BEAs) are frequent in healthcare settings and may cause such severe consequences as HIV and Hepatitis B and C infections. The objective of the study was to determine the attitudes and practices of nursing students facing BEAs.

Materials and Methods: This was a cross-sectional prospective study conducted from August 16 to 23, 2011 at the “Institut National de Formation des Agents de la Santé d’Abidjan” (the National Institute in charge of training Health Workers). Data were collected by means of self-administered questionnaires.

Results: Out of 266 student nurses included in the study, 73.3% were females while 26.7% were males. Their mean age was 29 years [20 years - 37 years]. A previous training was conducted on BEAs for 67.3% of nursing students. Those students who were immunized against hepatitis B were 75.2%. Needle recapping was practiced by 43.6% of nursing students. Unclean needles were eliminated in containers by 96.2% of the students and waste containers were within close reach of only 65.4%. Glove wearing was systematic in 77.1% of the students. Before the survey 38% of nursing students had been victim of BEAs at least once. Those BEAs were not reported in 68.3% of the victims.

Conclusion: The attitudes and practices of nursing students are inadequate with regards to BEAs. A module on Hospital Hygiene is necessary in view of improving the training of nursing students.

Key words: Attitudes - BEAs - Knowledge - Nursing students - Practices

Introduction

Since the discovery of HIV, BEAs have become a matter of interest. In this regards Western Countries have put in place appropriate preventive measures in view of reducing their incidence. In Africa, BEAs are still frequent. According to studies conducted in West Africa, notably in Côte d’Ivoire, the incidence of BEAs varies between 19.9% and 60% among health workers (Tarantola et al, 2005; Eholie et al, 2002). These BEAs occur in (medical and nursing) students between 5.4% and 18.6% of the cases according to the same authors (Tarantola et al, 2005; Eholie et al, 2002). This is a serious public health issue which may impact on the organization of healthcare notably the choice of department by health workers (Diarra et al, 1996, Fourn and Duci, 1993) and even lead to the refusal of healthcare provision by some health professionals (Adebamowo et al ; 2002).

Medical and nursing students at the Institut National de Formation des agents de santé (INFAS) are soon going to join the workforce in the medical field. In this regards, their training should include current issues like BEAs. . The survey, merely, relating to nursing students revealed a fear of HIV in healthcare settings (Fourn and Duci, 1993). The other studies did not assess exclusively nursing students on BEAs in Abidjan ([Diarra et al, 1996; Eholie et al, 2002; Ehui et al, 2007; Ehui et al., 2010).

In this regards it was necessary to conduct this study in view of specifying their know-how and attitudes when facing BEAs in order to deduce actions to be carried out to enhance their safety and the safety of the future health professionals. The aim of this study was to determine the attitudes and practices of nursing students regarding BEAs in order to suggest some measures that will reduce the occurrence of these accidents which may have severe consequences.

Materials and Methods

Place of study

This study was conducted at the Institut National de Formation des Agents de Santé (INFAS) d’ABIDJAN, the first Institute of Côte d’Ivoire. The « Institut National de Formation des Agents de Santé (INFAS) d’ABIDJAN» is a National Public Establishment created in 1991. Its mission is to train and build the capacity of health workers as well as conduct research in nursing care and biotechnology. There are four “INFAS” in Côte d’Ivoire and our study was conducted at the first training institute of Abidjan. It is located within the premises of the University Teaching Hospital of Treichville.

Study population

We included nursing students of 2nd year at the “INFAS” who were carrying out healthcare services during their Hospital Placements, and were present during the period of the survey and gave verbal informed consent. We did not include 1st year students of the “INFAS” as they do not perform healthcare, which could have exposed them to BEAs and the students of other years who did not wish to take part in the study.

Type and duration of the study

It was a descriptive cross-sectional prospective study conducted using a self-administered questionnaire from August 16 to 23, 2011, i.e. over a period of one week.

Variables studied

Variables studied were related to the epidemiological data of nursing students (age, sex, immunization status, BEAs history), and to attitudes and practices of nursing students when confronted with BEAs. These practices include care organization, place of disposal of unclean needles, location of waste manifold, wearing of gloves, number of BEA victims, number of times, BEA type, BEAs reporting, cause of non-reporting, reporting authority, reporting deadline, need for medical certificate and HBsAg dosage.

Sampling

It was an exhaustive sampling relating to all the nursing students who agreed to take part in this study.

Data collection

Data collection was conducted by means of a self-administered questionnaire previously validated by a survey conducted with a sample of 15 first-year-nursing-Students.

Data processing and analysis mode

Data collected were processed and analyzed with the software EPI INFO 2000. Quantitative variables were expressed as an average with extreme values. Quantitative values were expressed as a proportion.

Ethical aspects

This study was conducted with the authorization of the Directors of the Medical Research and Teaching Units of Bouake and of the "Institut National de formation des Agents de la Santé (INFAS)". An anonymity number attached to each survey form enabled us to keep the confidentiality.

Table I: Practices of nursing students regarding with BEAs

practices or nursing students	Number	Percentage
Care planning (n= 266)	245	94.1
Recapping of unclean needles (n= 266)	116	43.6
Disposals of needles in a container (n= 266)	256	96.2
Wearing of gloves in case of skin lesion(n= 266)	243	91.4
Systematic wearing of glove (n= 266)	205	77.1
Immediate care in case of BEAs (n= 101)	98	77.0
Non-reporting of BEAs (n= 101)	69	68.3

Table 2: Distribution of BEA cases among 101 nursing student victims

Number of BEA cases	Number	Percentage
1 (once)	51	50.5
2 (twice)	29	28.7
3 (thrice or more)	21	20.8

Table 3: Distribution of reporting authorities according to nursing students

Reporting Authority	Number	Percentage
Care Unit Supervisor	92	41.8
Administration	86	39.1
Occupational Physician	42	19.1

Administration include the Head of Department or the Director of the Hospital

Results**Sociodemographic characteristics**

We recorded 266 nursing students of whom 195 were female (73.3%) and 71 males (26.7%) i.e. a Male to female ratio of 0.36.

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Their mean age was 29 years with extremes of 20 years and 37 years. The age bracket 25 to 29 years (47.4%) was the most represented of the overall number of nursing students.

Attitudes of students regarding BEAs

Attitudes were assessed through the concept of prior training on BEAs, the reaction to BEAs risk and immunization status against hepatitis B. The practices have been described throughout the organization and care practices

Previous training on BEAs

Out of the 266 nursing students 67.3% received a prior training on BEAs but all of them (100%) wished to receive further knowledge regarding BEAs.

Reaction of nursing students to BEA risks

Worrying was the dominant reaction of nursing students confronted with BEAs representing 74.1% of the cases, followed by fear (20.3%) and apprehension (5.6%).

Immunization status of nursing students

Nursing students who had properly been vaccinated against Hepatitis B constituted 75.2% of the cases. HBsAg dosage was conducted only in 14.5% of immunized nursing students to evaluate hepatitis B vaccination efficiency.

Practices of nursing students regarding BEAs

The practices of nursing students were detailed in Table I.

Planning of healthcare by nursing students

An organization of healthcare was developed for 92.1% of nursing students before the beginning of their implementation.

Recapping of unclean needles

Recapping of needles was practiced by 43.6% of the nurses.

Disposal of unclean needles

Unclean needles were eliminated in waste manifolds by 96.2% of the nursing students. Manifolds were at a close reach of nursing students in 65.4% of the cases while performing healthcare.

Wearing of gloves by nursing students

Glove wearing was systematic with nursing students in 77.1% of the cases while performing healthcare. Nursing students who had skin lesions wore gloves while performing healthcare in 91.4% of the cases.

Behavior of nursing students in case of injury while performing healthcare

Almost all the nursing students used to clean their own injuries first (97%) when they were injured while performing healthcare.

Nursing students who experienced BEAs

One hundred and one nursing students (38%) had been victim of BEAs at least once. Of those 101 victims of BEAs, 49.5% had had at least two accidents as shown in table II. The 126 BEAs cases reported by nursing students were pricks (64;50.8%), projection on mucosa (38;30.2%) and cuts (24;19%). In 68.3% of the cases, BEAs were not reported to the competent authority. The main reason of the non-reporting of BEAs by nursing students was the ignorance of the reporting procedure (49.3%) (Figure 1).

Among the 266 nursing students, 83.1% knew that BEA case reporting was compulsory. Concerning who to report cases of BEAs, the Care Unit Supervisor was the most listed person (41.8%), followed by the Administration (39.1%) and the occupational physician (19.1%)

(Table III). More than half of the nursing students (56.4%) believe that reporting of a case of BEA should be undertaken within a deadline of 48 hours (Figure 2). The issuing of a medical certificate was necessary for 67.3% of nursing students.

Discussion

This prospective study enabled us to determine the attitudes and practices of nursing students to BEA. More than one third (38%) of the students have been confronted with BEAs at least once before.

Regarding attitudes, 67.3% of nursing students reported having received some training related to BEAs, which shows the interest of the institution in charge of training health workers for the prevention of BEAs in future health professionals. It is an appropriate measure as the

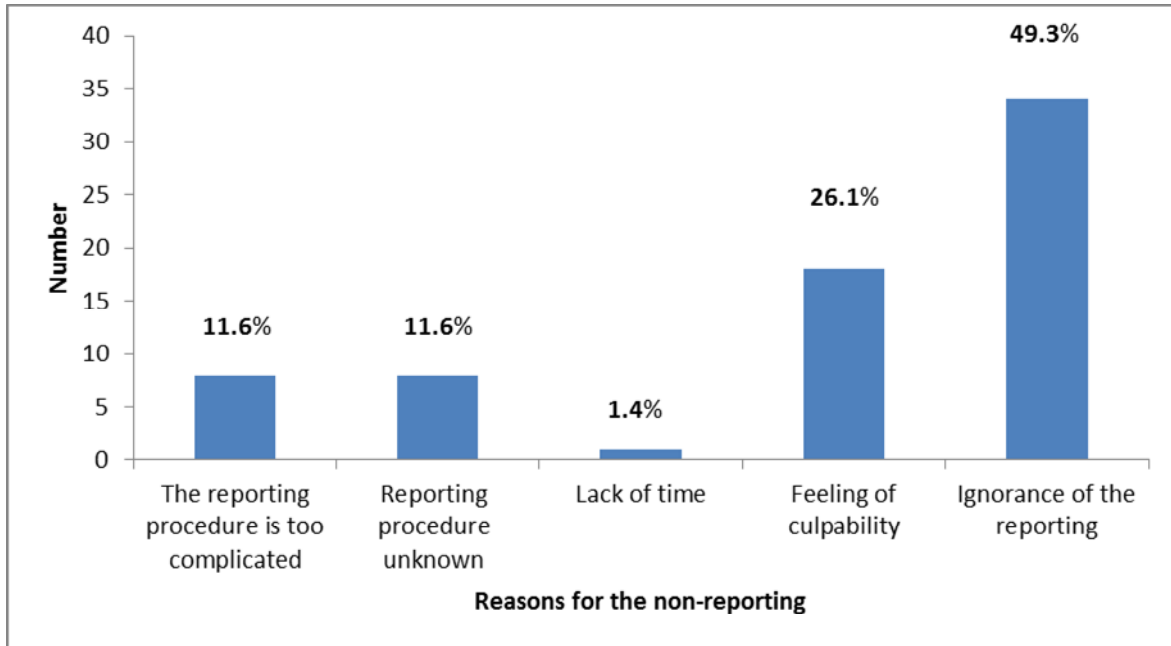


Figure 1: Distribution of 69 nursing students according to the reasons they do not report BEAs cases

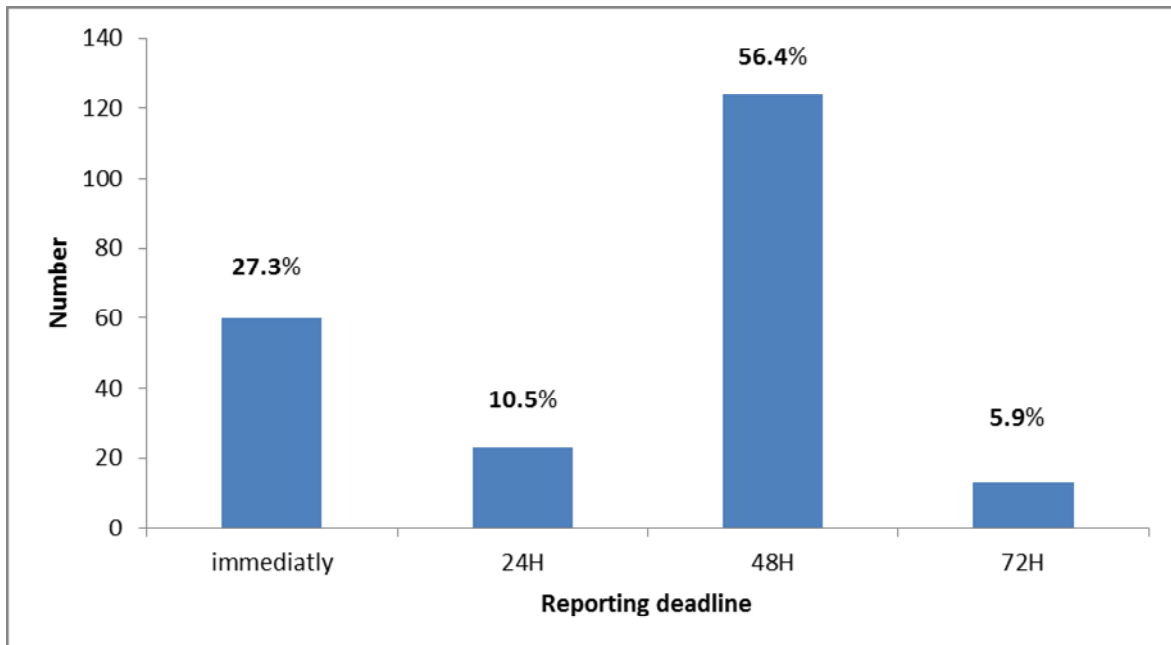


Figure 2: Distribution of 266 nursing students according to the reporting deadline

country has a high prevalence of HIV and Hepatitis B (Tarantola et al, 2005; Ehui et al 2007; Kra et al 2008; Kra et al 2012). This fact justifies the high proportion of nursing students immunized against the virus of hepatitis B in this study as well as in the study of other authors. A study by Ennigrou et al (Ennigrou et al, 2003) showed that two-thirds of the surveyed population were immunized, a national French survey conducted in 5000 surgeons also revealed that 79.2% of them were immunized (Johanet et al, 2000). However, the efficiency of the vaccination should be assessed for the security of health professionals. Because a vaccination against Hepatitis B update, mostly without control of the immunization efficiency, falsely reassuring the caregiver who obscure HIV and HCV risk (Rabaud, 2003) .

All the nursing students would like to receive an additional training in relation with the worries felt by 74.1% of them. This worry is legitimate given that 60% of health workers have been victim of BEAs in Côte d'Ivoire with a majority of cases in nurses and moreover in nursing students (Eholie et al 2002 ; Tarantola et al 2005]. This worry already reported by Fourn (Fourn and Duci, 1993) in a study conducted on HIV in the same site as ours is also a revealing factor of the risk awareness of nursing students which should have a positive impact on their practices. Those nursing students who, in their vast majority, reported having received a training related to BEAs had some prevention practices of those accidents. Thus 92.1% of nursing students are used to doing a planning of cares before their implementation. This organization of the work is recognized as a preventive measure of BEAs (Bouvet, 2003). But 43.6% of nursing students continued to practice risky gestures i.e. needles recapping. Our results are higher than those of Ehui and N'Diaye (Ehui et al 2007; N'Diaye et al 2011) who found in respective order 11.4% and 33.3% of BEAs occurred during the recapping among practicing health professionals. This difference could be explained by the lack of experience of nursing students (Rabaud, 2003) and insufficient training regarding BEAs. However, the influence of confirmed nurse bad practices should not be excluded. Hence the importance of the cascade training of health professionals in the reduction of BEAs as revealed by Bouvet (Bouvet, 2003). The management of medical waste, namely unclean needles is an important element in the prevention of BEAs contained in the Universal Precautions (GERES, 2008). In this study, nursing students used to dispose of their needles in a container in 96.2% of the cases. But this container was available in the healthcare setting only in 65.4% of the cases. These results are superimposable to the results of Kra et al (2011) who found 67% of container availability in the healthcare setting in a similar survey conducted 4 years ago. These facts confirm the lack of material which is recurrent in our healthcare facilities. In this study, glove wearing was a measure kept in 77.1 of the cases to carry out care provision and in 91.4% of the cases when nursing students were carriers of skin lesions. Our results are close to those of N'Diaye et al (2011) and Kra et al (2011) which revealed in respective order 68.7% and 100% of proper wearing of gloves while performing healthcare. However, the wearing of gloves seems less respected in France and in other Northern countries. As a matter of fact, it is 17% in the study of Rabaud (Rabaud, 2003) and varies between 44.3% and 84.5% in that of Parmeix (Parmeix, 2003). In the works of Nelsing in Denmark, glove was worn by 63 health workers i.e. 23.4% (Nelsing et al, 1997). This difference could be explained by the negligence or the non-perception of the risk given the weak prevalence of HIV and the availability of prophylactic treatments in those countries. However, glove wearing keeps an important place in the prevention of BEAs, by preventing skin contacts with blood and biological fluids and by reducing the inoculum during an injection (Abiteoul, 2003). Its place in standard precautions is pertinent (Abiteoul et al, 2010). The use of gloves does not prevent the occurrence of BEAs such as injuries. In case of injury, almost all (97%) of nursing students followed the recommendations by stopping the care provision for the treatment of the wound against 66% in the study of Rabaud (2003) conducted in practicing health professionals.

Before this survey, 38% of nursing students had been victim of BEAs. Our results are superimposable to those of Ennigrou et al (2003) which revealed that 39% of the staff surveyed in a surgical department have at least been victim of BEAs once during the previous 12 months of the survey. These results are less than those of Eholié et al in Abidjan, Laraqui et al in Morocco and Kara-Pékéti K et al (Eholié, 2002; Laraqui, 2008; Kara-Pékéti, 2011) who reported in respective order 60%, 85% and 62.3% of BEAs cases in their studies . This difference could be explained by the fact that their study related to health professionals whereas ours was conducted in nursing students whose working time remains greatly inferior to that of their elders. In France, the incidence of BEAs in students varies between 8 and 12.6% (Parmeix, 2003); these figures are compatible with those of Ehui et al (2007) who found 7.1% of BEAs in nursing students. Three main types of BEAs were identified in our study namely pricks, cuts and ocular projections. Our results are in conformity with data available in the literature (Ehui et al., 2007; Darouiche , 2010;Kra , 2011; N'Diaye , 2011).

Despite their severe consequences (HIV, HBV and HCV) and the existence of antiretroviral prophylaxis, BEAs are still under reported. This under reporting was 68.3% in our study; the result is similar to that of Tarantola et al (2005) in their multicenter study conducted in West Africa (Côte d'Ivoire, Mali and Senegal). In Northern Africa notably in Morocco the under reporting of BEAs was 58% in a recent study conducted by Laraqui et al (2008). In France it remained important and varied between 38 and 41% (Caillard, 2003;Johanet, 2003). A study by Johanet et al was conducted among surgeons and that of Caillard among nurses. Among French medical students (Caillard, 2003;Johanet, 2003) or English medical students (Kirpatrick,1993), this no reporting was more accentuated varying between 60% to 70%. The under reporting of BEAs is an obstacle to epidemiological surveillance, prophylactic treatment and post-exposition medical follow-up of affected people (Ennigrou, 2003).

According to N'Diaye et al (2011) this under reporting could be explained by the negligence of victims, ignorance of the modalities, the under-estimation of risks and constraints related to prophylactic treatment and to serological follow-up.

In this study, the reasons of the under reporting in nursing students who are victims of BEAs were ignorance of the reporting (49.3%), the feeling of culpability(26.1%), issues related to the procedure which was ignored (11.6%) or judged too complicated (11.6%). This was noticed in African studies (N'Diaye et al 2011; Laraqui et al 2008; Gzara et al, 2008) and European (Caillard, 2003; Denis et al, 1998). Among nursing students, 83.1% recognized that it was a must to report BEA cases like in the study of Eholié et al (2002) where 84% of health professionals were of the same opinion. This reporting was to be made to the Care Unit Supervisor (41.8%), to the Head of Department or to the Director of the Hospital (39.1%) or to the Occupational Physician (19.1%). In the study of Eholié et al (2002), such cases were preferably reported to the Head of Department or to the Director of the Hospital in 50% of the cases, to the Occupational Physician in 24% of the cases or to the Care Unit Supervisor in 14% of the cases. This reporting of BEAs, according to nursing students should be made mostly right after the incidence or within 48 hours as in the study of Eholié et al (2002). And that reporting should give way necessarily to the issue of a medical certificate in 67.3% of nursing students. This certificate keeps records of the occupational accident and begins the indemnification procedure. However, BEAs reporting enables access to free prophylactic antiretroviral treatment which is more and more available and prescribed in the study of N'Diaye et al (2011), Ehui et al (2007) in respective order in 50% and 82% of reported BEAs cases.

Conclusion

At the end of this prospective study on the attitudes and practices of nursing students confronted with BEAs, we noticed that the level

of risk perception during care provisions was important. However, risky practices remain and are dominated by recapping in a context whereby security materials are not available and the immunization against VHB remains weak. A module on Hospital Hygiene should be introduced in the training curricula of nursing students and awareness programs should be conducted on the importance of VHB immunization.

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