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The trivialization of blood exposure accidents in the hospital environment

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Abstract

Background and objectives. *Blood exposure accidents (BEA) are one of the problems faced daily by health care personnel.*

Materials and methods. *This study aims to determine the psycho-technical characteristics of the trivialization of BEA in health care facilities in the Tangier-Tetouan-Al Hoceima region in northern Morocco, and to identify the main causes of their underreporting.*

We conducted a cross-sectional, descriptive study for analytical purposes over a two-month period. A total of 117 professionals agreed to participate in the study.

Results. *Eighty-eight of them had been victims of a blood exposure accident (BEA). 65% were nurses, 33.3% of the respondents worked in health centers and only 31.6% declared this risk.*

The most significant mechanism for the occurrence of the accident was pricking during injections (64.1%).

The most frequent reason for the trivialization of BEA was the complexity of the reporting procedure (38.5%), and the reporting rate was therefore very low. The underestimation of the risk was clearly perceived. No contamination was recorded and several determinants of the trivialization of BEA were revealed (lack of knowledge of the procedure, no notified seroconversion, etc.).

Conclusions. *This study initiates a reflection on the necessary actions to be carried out to encourage health care personnel to declare BEA as an occupational accident and to prevent the resulting occupational diseases.*

Keywords: BEA, trivialization, human error, hospital environment, under-reporting

Abbreviations:

BEA	– blood exposure accidents	HBV	– hepatitis B virus
HIV	– human immunodeficiency virus	HCV	– hepatitis C virus

INTRODUCTION

Blood exposure accidents (BEA) constitute a risk for health professionals in the various basic health care facilities because of the infectious risk that may result [1,2].

The infectious risk of BEA is a real danger for healthcare workers. It is linked to the transmission of a pathogen carried by a patient. Seroconversion linked to the transmission of, for example, the human immunodeficiency virus (HIV) and hepatitis B (HBV) and C (HCV) is considerably formidable, even if it may seem low (0.30% for HIV, 0.50% for HCV) [3,4].

Historically, it is only a few decades ago that the risk of blood exposure accidents among health profession-

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als caused alarm, especially with the appearance of AIDS, and more particularly with the tragedy of contaminated blood, that the risks linked to contact with blood became well known [5].

Infectious contamination is rarely mentioned [6]. According to previous studies, no contamination has been recorded, but chronic viremia only appears after a long period of time.

The combination of the time factor with the rarity of contaminations develops in health workers a behavior of trivialization of BEA despite the fact that they are vigilant to the harmful consequences of this risk.

In our national context, the rate of BEA is unknown and very few studies limited to a few public hospitals have been carried out [6], as well as no legislation regulating or obliging the vaccination of health care workers despite the fact that the latter are considered to be a high-risk group with regard to HBV [7].

In fact, previous studies show that the high rates of BEA suffer from significant under-reporting, which means that BEA among health professionals are trivialized and the infectious risk in hospitals is underestimated.

In this context, the identification of the different root causes of the trivialization of BEA is essential to analyze this phenomenon and thus propose improvement actions to raise awareness among health professionals and encourage them to report BEA.

The objective of this work is to answer the following question: What are the causes of the trivialization of BEA by health professionals of Morocco?

MATERIALS AND METHODS

This cross-sectional, descriptive study was carried out over a two-month period (January 1 - March 1, 2022) at resident basic healthcare facilities in the Tangier-Tetouan-Al Hoceima region. To guarantee the representativeness of our sample, we used a stratified sampling method. These establishments include hospitals (8 provincial hospitals, 3 regional hospitals, 5 local hospitals) and urban and rural health centers (73 urban centers, 185 rural centers).

It is important to note that this sampling process was carefully designed to ensure the representativeness of our sample and the validity of our results. Random sampling was used to minimize selection bias and ensure that the data collected is generalizable to the entire population of healthcare professionals in the Tangier-Tetouan-Al Hoceima region.

To carry out this study, we collected data using an anonymous self-administered questionnaire. The questionnaire was based on the one proposed by DRUET-CABANAC in 2003.

The questionnaire is self-administered and anonymous, meaning that participants complete it themselves and are not identified individually. It has been developed on the basis of the questionnaire proposed by DRUET-CABANAC in 2003, which gives it a sound theoretical basis for assessing BEA and associated practices.

The questionnaire is divided into three distinct sections:

- Socio-professional characteristics: This section collects information on aspects such as gender, department of work, and other demographic and professional data of healthcare workers. These data are essential for understanding the professional context of the participants.
- Unreported BEA: This section focuses on unreported incidents of blood exposure. It explores the causes of non-reporting, as well as the reasons that may influence the decision not to report a BEA. This information may reveal gaps in reporting procedures and opportunities for improvement.
- Knowledge about BEA: This section assesses the state of participants' knowledge about BEAs, including their ability to recognize a BEA, their understanding of responsibilities in the event of a BEA resulting in contamination, and other aspects related to BEA prevention and management.

The questionnaire aims to obtain accurate data on the knowledge, attitudes and practices of healthcare providers with regard to BEA. By gathering this information, the study can identify gaps in healthcare professionals' understanding, barriers to reporting BEA and other specific ergonomic issues they face. These data will enable recommendations to be made for improving health policies and practices in healthcare facilities, thus promoting a safer and more efficient working environment.

DRUET-CABANAC's 2003 questionnaire consists of 13 questions, and can be adapted or modified to suit the specific needs of the current study. Standardization of the questionnaire ensures consistency in data collection, enabling valid comparisons of responses between different participants.

The questionnaire has been validated and tested to ensure the reliable measurement of consistent and accurate data in terms of BEA trivialization.

The questionnaire is intended for all healthcare staff, according to their different professional categories: doctors, surgeons, specialists, pharmacists, midwives, nurses and healthcare technicians. Our study population was made up of nursing staff working in public health establishments in the Tangier-Tetouan-Al Hoceima region.

The data collected were processed using SPSS software, and participants' consent was obtained in a written, free and informed manner. Ethical considerations such as voluntary participation, authorization to use the questionnaire and confidentiality of information were respected.

RESULTS

1. Socio-professional characteristics

A total of 117 healthcare professionals agreed to participate in this study. Eighty-eight of them had already been victims of BEA. Women represented 55.6% (n=65) and men 44.4% (n=52).

The most representative socio-occupational segmentation was nurses: 65% (n= 76). The most representative healthcare services in this study were health centres (33.3%), emergency (13.7%), operating theatre (12.8%) and maternity-gynecology (6.8%) (Table 1).

TABLE 1. *Representation of survey participants according to care departments*

Health care departments	Frequencies	Percentages
Emergencies	16	13,7
Operating theatre	15	12,8
Resuscitation	4	3,4
Medicine	6	5,1
Maternity - Gynecology	8	6,8
Pediatrics - Neonatology	5	4,3
Medical Biology Laboratory	3	2,6
Radiology - Medical Imaging	2	1,7
Hemodialysis	6	5,1
Health Centre	39	33,3
Another department	11	9,4
Total	117	98,3

20.5% of the respondents work in the provincial delegation of the Ministry of Health in Larache. 88% have had a BEA. Trainees (doctors and nurses) are excluded from this study.

2. History of blood exposure accidents

Respondents stated that 88% of them (n=103) had already been the victim of one or more BEA in the course of their care. While 68.4% of these BEAs were not reported (Table 2). Of the 31.6% reported, 72.6% did not comply with the official reporting period of 48 hours following the BEAs.

TABLE 2. *Reporting of BEA*

Health care departments	Frequencies	Percentages
BEA declared	37	31,6
Unreported BEA	80	68,4
Total	117	100,0

3. Context related to blood exposure accidents

During the practice of health care, the massive and frequent use of sharps exposes health professionals to blood exposure accidents (see Table 3). 64.1% of the respondents confirmed that the most significant type of BEA is the pricking of previously used needles.

In addition, 79.5% of the respondents stated that preventive safety precautions were not well-respected during BEA: care without wearing personal protective equipment.

TABLE 3. *The typology of BEA*

The typology of BEA	Frequencies	Percentages
Cut	8	6,8
Mucocutaneous projection	24	20,5
Sting	75	64,1
All three	5	4,3
Other	5	4,3
Total	117	100,0

4. Reasons for non-reporting of blood exposure accidents

Among the reasons for non-reporting were: the complexity of the process (38.5%), lack of knowledge about the reporting procedure (21.4%), and cases of patients who were not carriers of a viral infection (19.7%). Other less important reasons were reported by the respondents, namely: lack of time (9.4%) and failure to observe hygiene precautions (8%) (Figure 1).

5. Precautions in the event of a blood exposure accident

Following the BEA, 60.7% of our respondents performed only first aid. 12.8% checked the patient's serology. 12% checked their own serology and only 6% consulted an occupational doctor. Whereas, 4.3% of the respondents did nothing (Table 4).

TABLE 4. *Precautions taken during BEA*

Precautions in the event of a BEA	Frequencies	Percentages
Carry out first instance care	71	60,7
Systematic reporting to your management	4	3,4
Search for the patient's serological status	15	12,8
Consultation with the occupational health department	8	6,8
Checking your own serology	14	12,0
Nothing	5	4,3
Total	117	100,0

6. Knowledge of blood exposure accidents

Concerning the evaluation of health professionals' knowledge of BEA, 86.3% of respondents knew the various infectious diseases that can be transmitted during BEA (Table 5). 65% of the respondents knew that the administration of antiretroviral drugs within 48 hours of a BEA contributes to the prevention of HIV infection.

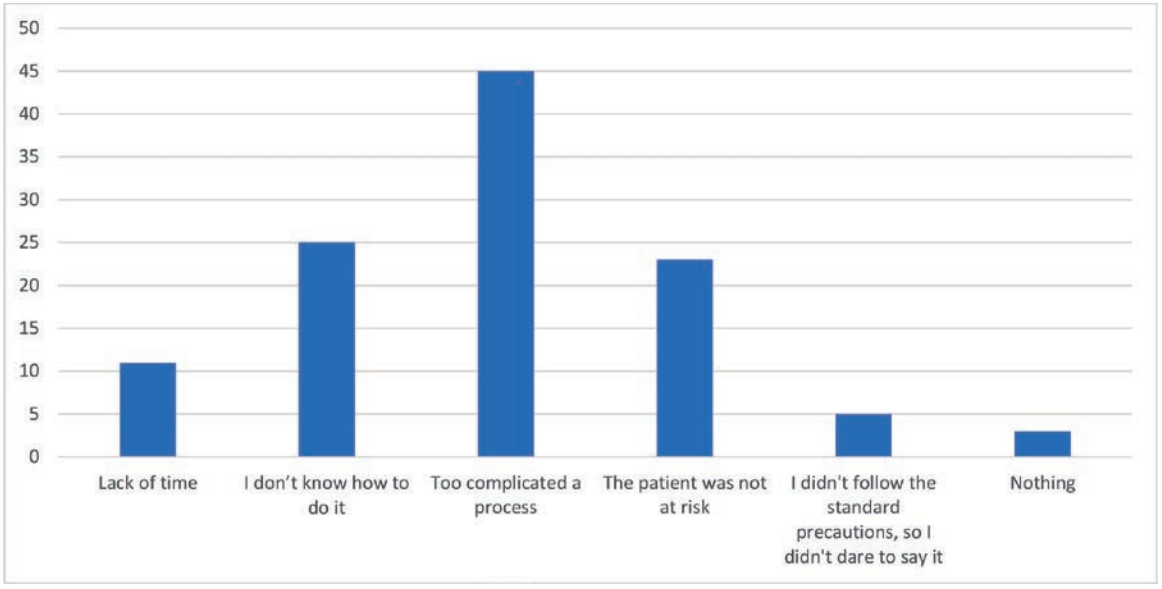

FIGURE 1. *Reasons for non-declaration*

TABLE 5. *Knowledge about possible contamination during BEAs and the effectiveness of antiretroviral drugs in preventing HIV*

	Knowledge about possible contaminations during BEA		**Knowledge about the effectiveness of antiretroviral drugs in HIV prevention**	
	Frequencies	Percentages	Frequencies	Percentages
Yes	101	86,3	76	65,0
No	16	13,7	41	35,0
Total	117	100,0	117	100,0

7. Health professionals' experience and perception of a reported or unreported BEA

BEAs are mostly experienced as an accident (69%) and an unavoidable risk (25%), and the notions of human error and clumsiness are highlighted by 8% of respondents (Figure 2).

DISCUSSION

The trivialization of blood exposure accidents is a worrying phenomenon as it can lead to an underestimation of the infectious risk incurred by health professionals and to a decrease in vigilance in terms of prevention.

Blood exposure accidents can have serious consequences on the health of health professionals, such as the transmission of infectious diseases like hepatitis B, hepatitis C and HIV. In addition, these accidents can also have important psychological consequences for health care workers, such as anxiety, fear and stress.

On the basis of the results obtained in terms of the attitudes and behavior of healthcare professionals towards BEA, we have been able to determine the causes of the trivialization of this risk and to study the reasons for this phenomenon, several points of which have

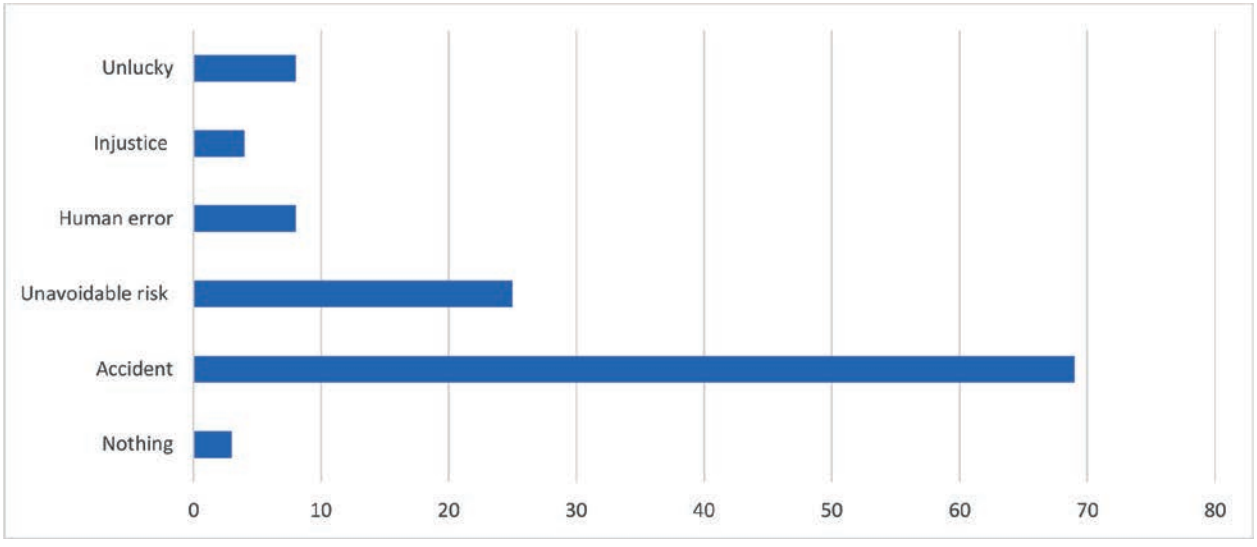

FIGURE 2. *Respondents' perception of BEA*

been revealed by our study, which we will compare with previous studies.

1. Overexposure of nurses to blood exposure accidents

Our study shows the overexposure of nurses to blood exposure accidents. 65% have a history of a BEA during care practices. This finding was already mentioned in the survey of the National Institute for Safety Research by ABITEBOUL et al. in 2003 [8].

This is due to the high number of high-risk care acts carried out in the various care departments [9], for example injections during vaccination sessions (which represent 33% of our sample).

In the literature, blood exposure accidents are often caused during the use of a dirty blade or a dirty needle [10]. Also, it could be due to the use of medical-surgical forceps during the placement of sutures, during the zero incision of an abscess, during the sorting of waste, or during the taking of blood [11].

Thus, a blood exposure accident, according to the previous explanations, is an accident that a staff member may suffer during simple nursing care. In particular, the prick, the cut with a scalpel blade and biological projections [12].

Nurses are a particularly exposed population. It is therefore important to integrate the declaration of BEA into basic training courses to introduce care staff to this risk and help them to record these accidents, identify the circumstances in which they occur and consequently encourage them to seek improvement actions to prevent them.

2. The trivialization of BEA is the main cause of underreporting

The trivialization of BEAs is part of a defensive strategy adopted by health professionals. 88% of the respondents to our questionnaire (103 in total) had already been the victim of one or more BEAs in the course of providing care. However, 68.4% of these BEAs were not declared as work-related accidents (unappreciated risk, professionals not involved).

Health professionals trivialize the risk of blood exposure accidents on the grounds that the patient is not an infection carrier, which could be in an often-unconscious character [13], for health professionals the perception of risk is an imaginary state, not a real appreciation, but a personal representation [14]. This perception is judged to be negative in the absence of systematic testing for HIV, HBV and HCV, and even negative in the absence of regulations requiring health professionals to be vaccinated against the hepatitis B virus.

On the other hand, victims' prejudices about the seriousness of the type of BEA, 12.8% of respondents in our study, automatically look for the serological status of source patients. This result was not found in the study by ZANNOU and ABITEBOUL in 2008 [15], which confirmed that knowledge of the source patient's serological status directly influences the behavior of the caregiver with regard to the reporting of BEA.

Furthermore, healthcare professionals question the benefit of reporting these BEA: The question of the benefit of reporting BEA is one of the most typical obstacles linked to under-reporting of BEA, according to our results, 86% do not report BEA because the reporting pathway is still unknown, generally the lack of response reflects a very important limitation among healthcare professionals who are victims of BEA [16].

Adding to this point the complexity of the administrative steps and the lack of knowledge of the circuit. The complexity of the process of reporting BEA is one of the most typical obstacles in previous studies, according to ATIKI (2011) [17] they are considered one of the main causes of non-reporting of BEA. As our results confirm, 38.5% criticize the complexity of the reporting procedure. Thus, 68.4% of blood exposure accidents are not accounted for in the reporting of work-related accidents in the hospital environment.

This result is consistent with the results of previous work [18,19], where health professionals who suffer a BEA only perform first aid (60.7%) and forget to refer to an occupational physician.

These constraints affect all unreported BEAs without distinction between BEA typologies. As our results show, the most reported type is BEA by prick (64.1%), whereas mucocutaneous exposures seem to be unreported. This reality has a negative influence on safety behavior in hospitals, a BEA are becoming commonplace.

3. Equating BEA with human error

The hypothesis that health professionals do not report blood exposure accidents because they consider it to be human error is verified. 6.8% of our respondents consider that BEA is caused by human error. But the majority of respondents (59%) consider that BEAs are accidents caused also by the dysfunctions and failures that exist as a result of the vulnerability of the hospital environment. The variables: clumsiness (8%) and injustice (4%) are felt by our respondents to be due to concern about the consequences, the lack of support, work overload and the absence of continuous training on the subject of the risk of infection linked to BEAs [20].

4. Caregivers' fear of the consequences of reporting BEAs on their professional career

In the Moroccan hospital system, there is no impact of the declaration of blood exposure accidents on the professional career of caregivers, this has never been noted in previous surveys, but it is perceived in the interviews with health professionals [10]. According to

NOE's study (2015) [20], which focused on student nurses who were victims of BEAs. The latter were condemned by judgements of lack of knowledge and lack of professionalism.

5. BEA risk to the caregiver and the cared for

On the one hand, the fear of being discovered infected is already affirmed in the AUQUE study in 2010 [18], which states that the fear of being known to be infected is a fear that intervenes in the non-reporting of BEAs. This is confirmed by our study, as 12% of respondents seek their serological status on a personal basis outside the reporting procedure.

On the other hand, the non-declaration of BEA can slow down the discovery of cases of contamination from the career to the patient and despite this, non-declaration still persists. This reality obliges hospital management to rethink the issue of non-reporting because of its negative impact on public health [19]. On the other hand, all health personnel are obliged to respect the procedure and ensure compliance with good care practices in order to guarantee the safety of the careers and the quality of services.

CONCLUSION

Blood exposure accidents are a fact of life in the course of care in hospitals. They expose staff to various chronic viremias.

As a result, this risk is considered important because of the seriousness of the after-effects it causes, which requires close involvement of health professionals and managers.

In this sense, we advocate the establishment of a reliable and up-to-date surveillance system for BEA to reduce the incidence of BEA.

The creation of an occupational medicine department to manage the procedure for reporting blood-borne injuries is essential. Similarly, raising awareness of the danger of BEA is essential to combat the trivialization of BEA.

Most blood exposure accidents are avoidable by applying standard precautions, hence the need to involve all the actors in the structure to minimize this scourge, without forgetting the generalization of antiviral vaccination against hepatitis B, which is of capital importance in the fight against viral hepatitis B of occupational origin.

Author's contributions:

Ayman Kassbi: writing original draft, data curation, formal analysis, investigation, visualization, and writing review & editing. This research is based on Ayman Kassbi's graduation thesis.

Souad Filali El Ghorfi and Hicham Achelhi: conceptualization, accompaniment, draft correction, data curation, formal analysis, investigation, methodology, project administration, resources, software, supervision, validation, visualization, and writing review & editing.

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