

ASSESSMENT OF KNOWLEDGE, ATTITUDES AND PRACTICES ON VIRAL HEPATITIS B AND C IN HEALTH-CARE SETTINGS

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Abstract

Introduction: The establishment of occupational health in all health structures, the improvement of working conditions and the generalization of antiviral B vaccination have contributed to the virtual disappearance of occupational viral hepatitis B and the very significant reduction in the incidence of viral hepatitis C.

Aim: to assess knowledge, attitudes and practices on viral hepatitis B and C in health-care settings.

Method: cross sectional study using questionnaire.

Results: The latter was significantly higher for physicians (72.4%) than for support staff (66.8%) and nurses (60.5%) Viral hepatitis was feared by 82% of caregivers. Only 47.4% of the staff claimed to be correctly vaccinated against hepatitis B.

Conclusion: The prevention of occupational viral hepatitis B and C is an objective set by the recommendations issued by the WHO and the CDC.

Keyword: Hepatitis B, Hepatitis C

Introduction

Hepatitis is inflammation of the liver. Inflammation is the swelling of organs that occur when they are injured or infected, and can damage your liver. Swelling and damage can affect the proper functioning of this organ.

Hepatitis can be an acute infection (short term) or a chronic infection (long term). Some types of hepatitis only cause acute infections. Others can cause both acute and chronic infections. There are different types of hepatitis, with different causes, Viral hepatitis is the most common type. It is caused by one of several types, hepatitis viruses A, B, C, D, and E. In the United States, A, B, and C are the most common. Alcoholic hepatitis is caused by excessive alcohol consumption. Toxic hepatitis can be caused by certain poisons, chemicals, medications, or supplements. Autoimmune hepatitis is a chronic type in which your immune system attacks your liver. The cause is unknown, but genetics and environment can play a role

The risk of viral infection secondary to accidents involving exposure to blood (BSE) constitutes a serious threat to the health of health-care professionals in developing countries. In rich countries, the establishment of occupational health in all health structures, the

improvement of working conditions and the generalization of antiviral B vaccination have contributed to the virtual disappearance of occupational viral hepatitis B and the very significant reduction in the incidence of viral hepatitis C [11]. In Morocco, a country of moderate endemicity for viral hepatitis B and C, the risk of occupational infection is insufficiently taken into account [18, 24]. The object of this study was to assess knowledge, attitudes

Population and methods:

Population

This descriptive, multicentric and transversal epidemiological study was carried out in three hospital structures (Meknès, Taza and Tiznit) and one university hospital (Rabat) during 2005. The choice of these cities was dictated by the place of residence of the seven medical investigators who carried out this work as part of their final thesis to obtain the diploma in occupational medicine. The source population included 4,686 caregivers divided according to socio-professional categories into 2,661 paramedics (56.7%), 1,276 support staff (27.2%) and 749 doctors (16.1%). We selected, by drawing lots from exhaustive lists structured by socio-professional categories,

a representative sample of 1,562 people (33, 3%) having at least one year of seniority and working in contact with patients, biological fluids or soiled linen. Our sample consisted of 887 nurses, 425 support staff and 250 doctors.

Method

The support for the survey is an individual questionnaire, anonymized and adapted in such a way that it meets our objective [4]. It includes five sections:

- Socio-demographic and professional data (age, sex, family situation, socio-professional categories, area of activity, seniority);
- Assessment of attitudes and practices: products handled, risky objects handled, means of prevention used (personal protective equipment, secure equipment, disinfection of hands, equipment and work premises), conduct carried out in front of an AES;
- Assessment of knowledge (feared diseases, modes of transmission of viral hepatitis B and C, effectiveness of vaccination, action to be taken in the presence of an AES);
- Suggestions from health professionals;
- Individual characteristics related to the risk of infection (vaccination coverage, prevalence of viral markers, extra-professional risk factors for viral hepatitis B and C).

The individual interview with the professionals was carried out with respect for confidentiality after informing the interested parties about the objective of our study and their informed consent. Respondents responded to the questionnaire without difficulty and with enthusiasm. For some people, explanations and details were made in dialect Arabic. The respondents received a blood sample for the detection of HBs antigen and anti HCV antibodies by the third generation ELISA technique.

In order to establish homogeneous groups of activities between the different health structures, we have grouped the services into five poles: medical pole (cardiology, pediatrics, pneumology, dermatology, nephrology, psychiatry, oncology, gastroenterology, rheumatology), surgical pole (traumatology, neurosurgery, urology, visceral surgery and thoracic surgery), medico-surgical pole (gyneco-obstetrics, ENT, ophthalmology), pole anesthesia, resuscitation and emergencies and pharmacy and laboratory pole.

The socio-professional category (CSP) has been specified according to the classification of the Ministry of Health into three main categories: medical and related staff (doctors, pharmacists, dental surgeons), nurses [supervisory staff, nurses graduated from the State polyvalent, specialized state-certified nurses (midwives, physiotherapists, radiology and laboratory technicians), caregivers] and support staff [service agents and medico-technical staff (psychologist, educational or social staff)].

Statistical analysis

The statistical study was based on analysis of variance, Student's t test and Chi² with or without Yates correction. The chosen significance level corresponded to a p-value of 0.05. The software used was *Epi info* (version 6.04 dfr).

Results:

One thousand two people answered the questionnaire; ie an overall participation rate of 64.1%. The latter was significantly higher for physicians (72.4%) than for support staff (66.8%) and nurses (60.5%) (p = 0.01).

Sociodemographic and professional characteristics of the population (Table I)

Of the respondents, 18.1% were doctors, 53.6% nurses and 28.3% support staff. The sample of respondents was representative in terms of gender (59.8% of women), age (mean age = 39.5 ± 6.8 years; with extremes ranging from 20 to 60 years) and age seniority (average seniority = 12.6 ± 8.3 years; with extremes ranging from one year to 38 years).

Assessment of attitudes and practices

Contaminants, objects and risky acts

The most frequently handled contaminants were blood (91.3%) followed by soiled linen (67.4%), waste (51.5%), puncture fluid (45.9%), sputum (26.3%), genital samples (10%) and lastly biopsy material (9.3%). The high-risk objects handled were, in decreasing order of frequency, hollow needles (77.9%), scalpels (64.4%), intranulas (52.4%), epicranes (45.4%), catheters (31.1%) and solid needles (33.5%). Risky procedures such as recapping and curling the needles used were performed by 47.3% and 16.4% of subjects, respectively.

Characteristics	N%
Age	
20-30	197
30-40	319
40-50	327
50-60	159
Sex	
FEMALE	599
MALE	403
Family situation	
SINGLE	353
MARRIED	649
Seniority	
1-10	398
10-20	289
MORE THAN 20	315
Professional categories	
MEDICAL STAFF	181
PARAMEDICAL	527
SUPPORT STAFF	284
ACTIVITIES	
MEDICAL	595
SURGICAL	142
MEDICOSURGICAL	125
EMERGENCIES-RESUSCITATION	104
LABORATORIES	36

The systematic use of protective equipment against AES was not respected by the majority of the personnel: 35.2% did not always wear a work coat and 66.9% the gown or pajamas; 75.6% did not systematically wear gloves and 72.3% the bib during treatment. Single-use syringes were

only used exclusively by 86% of caregivers. For waste, safety containers, transport bags and plastic garbage bags were not used systematically. The majority of staff (66%) used unsecured containers. Hand sanitizers were not always available. Soap or bleach was only used regularly to disinfect their hands by 63% of people. Alcohol at 70 ° and other antiseptics (iodine derivative, organomercurials, hexamidine, quaternary ammoniums) were systematically handled by only 45% of caregivers. For the disinfection of equipment, bleach at 12 ° diluted to 1/10e and soap were used by 57.7% of caregivers, 70% alcohol by 8.6%, iodine derivatives by 11.4% and heat (Poupinel) by 86.4%. Disinfection of work rooms was constantly carried out in only 73.1% of cases: once a day (17%), three times a week (28.4%) and once a month (27.7%).

What to do in front of an AES

Among caregivers, 89.2% were victims of at least one AES during their career and 62.8% during the last twelve months. Among the latter, 85.2% had benefited from correct disinfection, 11.1% from serology and only 8.3% from a declaration. The non-declaration was due to ignorance of the procedures, administrative difficulties and / or negligence of the victims.

Knowledge assessment

Viral hepatitis was feared by 82% of caregivers. The modes of transmission evoked were blood on injured skin (91.7%), needle pricks (83.5%), blood on mucous membranes (82.7%), sexual (44.1%) and blood on healthy skin (7.5%).

Among people who reported being properly vaccinated against hepatitis B, 32.4% thought they were perfectly protected, 50.3% moderately protected, 11.2% poorly protected and 6.1% unprotected. However, 87% said hepatitis B vaccination was necessary.

For the respondents, the action to be taken in the event of AES would be for 31% washing with soap, 30% bleeding, 28.7% disinfection with 70% alcohol, 14.4% with other antiseptics and 4.3% with 12 bleach diluted to 1/10. Serology was offered by 12% and the declaration of an occupational accident by 6.5%.

15 Among healthcare workers, 93.1% said that the risks of BSEs among healthcare workers remained high during daily patient care. The most important risk factors were the load and poor working conditions (permanent unavailability of personal protective equipment).

Suggestions from interviewees to improve working conditions

The staff wanted training and information courses on hepatitis (57.6%), correct and well-conducted vaccination against hepatitis B (52.6%), better availability of means of protection (60, 8%), improvement of working conditions with a reduction in workload (67.3%), establishment of an occupational health service in hospitals with reinforced medical surveillance of exposed subjects (39, 3%), improved social coverage for the care of sick staff (69.6%).

Individual characteristics related to the risk of infection

Immunization coverage

Only 47.4% of the staff claimed to be correctly vaccinated against hepatitis B. However, the vaccination coverage rate,

according to the statements of the subjects interviewed, varied from 19.3% in Tiznit to 61.5% at the University Hospital of Rabat where the vaccination rate of medical personnel reached 75.2%. Post-vaccination serology (search for anti-HBs antibodies) was only carried out in 2.7% of vaccinated subjects.

Prevalence of viral hepatitis B and C markers

The overall prevalence of anti-hepatitis C antibodies was 1.6% but ranged from 3.9% among physicians, 1.8% among support staff, and 0.7% among paramedics. For the HBs antigen of viral hepatitis B, the prevalence was 1.4% and varied from 2.2% among physicians, 1.3% among paramedics and 1.1% among support staff.

Extra-professional risk factors for viral hepatitis B and C

Apart from occupational risk factors, caregivers were exposed to individual risk factors such as dental care (38.5%), medico-surgical procedures (25.6%), piercing (19.1%) and blood transfusion (3.2%).

Discussion

Knowledge, attitudes and practices on viral hepatitis B and C in healthcare were assessed using a questionnaire from French studies [4]. It has not undergone cross-cultural validation and has been used in its original version. For some people, details and explanations were given in dialectal Arabic during the individual interview. However, this questionnaire appeared to us to be suitable for our survey because the majority of the people questioned were French-speaking and answered without difficulty. The representativeness of our sample and the high rate of participants (64.1%) allowed us to grant some validity to our results. The high participation rate of the care staff testified to their fears and their desire to contribute to the improvement of working conditions.

Prevalence of viral hepatitis

Occupational viral hepatitis due to AES is more frequent among health personnel, particularly paramedics, both for documented and possible cases. This category constitutes a risk group, with prevalences seven to eight times higher for HBV and two to twelve times higher for HCV compared to that of the general population [16, 25].

France is located in areas of low endemicity with less than 2% of HBsAg carriers [16]. Belonging to areas of moderate endemicity, the prevalence of carriers of HBsAg varies from 2 to 7% in Morocco. It was 2.5% among blood donors and 3.1% among health workers. In addition, at least one serological marker of HBV was found in 5.1% of nursing staff [26]. The overall prevalence of 1.4% for HBsAg, found in our study, seems low compared to the Moroccan data mentioned. However, it reached 2.2% among physicians.

The risk of HCV transmission after percutaneous exposure is probably lower than for HBV [34]. The seroprevalence of HCV in the general Moroccan population is 1.1% among blood donors [26]. This prevalence, considered high, poses a real public health problem. As this disease is often asymptomatic, the potential risk of occupational contamination for nursing staff is significant and varies

between 2% and 3% after exposure to the blood of a positive HCV patient. These low percentages, compared to the risk of contracting HBV, are explained by a lower viremia. Percutaneous exposure is the only documented occupational route of contamination, but the mucosal route remains possible [16]. A study carried out in Moroccan patients seen in dispensary consultation or in a hospital environment had shown that the prevalence of HCV infection was 7.7% [10]. This prevalence may have seemed high, compared to the prevalence of 0.3 to 1.5% noted in European countries. However, more recent studies, North American or European carried out in hospitalized patients had shown prevalence of anti-HCV antibodies between 4.5 and 6%, therefore close to those found in Morocco [8]. In our work, the overall prevalence of anti-HCV antibodies was 1.6% but reached 3.9% among physicians. However, more recent studies, North American or European carried out in hospitalized patients had shown prevalence of anti-HCV antibodies between 4.5 and 6%, therefore close to those found in Morocco [8]. In our work, the overall prevalence of anti-HCV antibodies was 1.6% but reached 3.9% among physicians.

Attitudes and practices and prevalence of AES

The risk of contamination following an AES in precarious working conditions would depend on the serological status of the patients, the frequency of viral infections among the patients admitted to the hospital, the epidemiological risk of seroconversion after exposure and especially the rate of occupational accidents. The analysis of the circumstances favoring AES has shown that compliance with the recommended preventive measures, such as not recapping needles, wearing gloves, using vacutainers, containers and usual detergents, could avoid them or lower their frequency. [33].

In our study, 89.2% of people were victims of at least one AES during their career and 62.8% of at least one AES during the last twelve months. Such high rates have been reported in the literature: 93% in Nigeria [27], 82% in Nord Pas de Calais in 1997 [4] and 78% in Chile in 1992 [34]. The double survey of the National Institute for Research and Safety - Study Group on the Risk of Exposure to Blood (INRS-GERES) conducted in 1996 and 1998 in hospital laboratories [14] made it possible to calculate respective incidences of 0.047 and 0.039 AES per year. In the first study, 37 AES were identified of which almost half (43%) were bites, 38% cuts and 19% projections. The 1998 survey documented 16 AES, 56% of which were punctures and 19% cuts [28]. Another Moroccan survey noted, an average annual incidence of 1.45 ± 0.3 and a cumulative incidence for the entire professional career of 14.3 AES [18]. In our study, needle sticks were cited as a mode of transmission by 83.5% of subjects. Several studies have

shown that punctures by hollow needles represented the majority of AES for nurses: 75% according to GERES [14, 30], 88% for the Committee for the fight against nosocomial infections (CLIN) of the Ibn Rochd hospital. in Casablanca [26] and 80% for that of Paris Nord [9]. This was because the bites were more likely to be reported because they were obvious and hurt [31]. Ivorian staff also accused this type of needles in 73% of cases [36], Japanese in 86.2% [29] and French in 60% [14]. A GÈRES survey [14] of 1,042 surgeons showed that 44.6% had pricks at least once in the month preceding the survey. More than half of them have already been tested and 37% have declared their BSE. In a study [24] carried out in 1998 on the risk of infection linked to blood among nursing staff in a hospital in Casablanca, we found the same percentages: 81% of people were victims of at least one accident involving exposure to blood. 49.4% disinfected their wounds, 58% made a bloodletting, 13.6% benefited from a serological survey and 4% declared the accident. The effectiveness of disinfection procedures after AES was only satisfactory in 42.5% among healthcare professionals in Morocco [18]. In our study, haste and urgency (56.9%), recapping (47, 3%) and bending (15.9%) were the risk factors most frequently cited as responsible for BSE. The prevalence of recapping was higher in other studies: 75% [18], 62% [11] and 60% [36].

In our study, the universal precautions were far from being well respected: indeed the systematic wearing of gloves was done in only 24.4% of cases and that of gowns in 64.8% of cases. Hand disinfection with soap was only practiced regularly by 63% of subjects against 68% in France [4] and that of equipment in 52.6% of cases. For Djeriri *et al.*, the wearing of single-use gloves during acts which require it would only be effective for 34.5% [18]. It is obvious that before requiring healthcare personnel to adopt protective practices, it is the employer's duty to provide him with sufficient protective equipment, to promote the use of new safer instruments, to train them in their use, to inform them and constantly raise their awareness of risky acts and gestures. The use of gloves was not systematic, especially among former nurses who had learned, at school, to work only or mainly with bare hands [1, 15]. Unfortunately, the availability of protective equipment continues to be often lacking in our hospitals. Thus, gloves, containers or bleach at 12 ° diluted to 1/10, basic resources were only permanently available less than half of the time. In another Moroccan survey, the containers intended to collect and facilitate the disposal of soiled objects and needles seem to be very insufficient for 34% of those questioned [18].

Hand disinfection after a suspicious gesture was performed in 79.4% of the cases in our study, of which 61.3% correctly (water + soap), against 68% in the north of France [16] and 50 % in Nigeria [27]. In our survey, 24.9% suggested better hygiene in the workplace. In an article on behavior and working conditions exposing to blood in healthcare establishments in Morocco, 63% of healthcare professionals judged occupational hygiene and safety to be insufficient [18]. Only 17% of our caregivers disinfect the

work rooms once a day. The systematic use of airtight containers was observed in only 34% of cases against 23.1% in Côte d'Ivoire [36]. *between for disease control* (CDC) in the United States, by the *Communicable disease surveillance center* (CDSC) in Great Britain and by GERES in France [12, 30].

The under-reporting of AES is evident in our series (8.3%) while in France, for example, reporting rates of 97% have been reached [17]. A similar rate of underreporting of 4% with serological monitoring of less than 1% was reported in another study among Moroccan health professionals and serological screening of source patients was never performed [18]. The reporting deficit is most often attributed to a lack of information and an underestimation of risk. Serological examinations after AES were carried out in only 11.1% of our health workers: this comes close to 5.6% in Nigeria [27].

Conclusion:

The prevention of occupational viral hepatitis B and C is an objective set by the recommendations issued by the WHO and the CDC. Biological fluids must be considered as a vector that *is a priori* contaminating and with which all contact must be avoided. In view of the seriousness of viral hepatitis and the expense engendered by its treatment, universal precautions in medical practice are necessary. The recent creation, by the Ministry of Health, of occupational health services in the health care environment with a system for monitoring the working environment and the health of the personnel should contribute to the improvement of working conditions, to vaccination compulsory and generalized and to information and education actions on the risks and consequences of AES.

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