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Parte scientifica e pratica

Mass screening for hepatitis B and C viruses in a population of persons with disabilities with and without HIV status in Cameroon

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Abstract

Summary: Hepatitis viral infections are one of major threat to public health worldwide. The vast majority of people infected with viral hepatitis are found in resources limited countries of Africa and Asia. There is a lack of accurate data to better determine the burden of this disease in Cameroon, moreover among vulnerable people. The aim of this study was to estimate the seroprevalence of HBV and HCV viruses among persons with disabilities (PwD) with or without HIV status. Methods: This was a cross-sectional study conducted in three regions of Cameroon (West, Center and Littoral regions). Participants were enrolled from social centers and health care centers run by non-governmental organization. Venous blood was collected from sterile tubes, which were left at rest in ambient temperature to obtain the serum. The tests HBV and HCV used were rapids chromatographic immunoassay test strips for visual reading for the qualitative detection of antibodies and or antigens (DiaSpot HBsAg and DiaSpot HCVAb). A questionnaire was also applied face-to-face for the collection of socio-demographic information and sexual behaviors. Results: 153 participants were included in the study; the majority of them (58.82%) were from the Littoral region and female (55.56%). The main disability was motor (53.59%) followed by sensory deficiencies (24.84%). Most of these were acquired disabilities (61.39%) mainly appeared after a cerebral vascular or road accident. More than 1/2 of respondent had at least one regular sexual partner and about 1/3 had an occasional sexual partner during the last six months. Less than 1/2 of participant declared had risky sex intercourse and only 30.77% declared use always condom during

sex intercourse. 5.23% (n=8) and 3.27% (n=5) participants were respectively positives for Hepatitis B and C. Conclusion: HBV and HCV might be high prevalent among disable individuals in the Cameroonian setting. We noted that sexual activity is real and risky among our study population. To deal with this vulnerability, it is important to intensify the efforts for reinforcing the level of knowledge on the HBV and HCV health impact.

Riassunto

Sommario: Le infezioni virali da epatite sono una delle principali minacce per la salute pubblica in tutto il mondo. La stragrande maggioranza delle persone infettate da epatite virale si trova in paesi africani e asiatici con risorse limitate. Mancano dati accurati per determinare meglio il carico di questa malattia in Camerun, per di più tra le persone vulnerabili. Lo scopo di questo studio era di stimare la sieroprevalenza dei virus HBV e HCV tra le persone con disabilità (PwD) con o senza HIV. Metodi: Si è trattato di uno studio trasversale condotto in tre regioni del Camerun (ovest, centro e littoral). I partecipanti sono stati iscritti da centri sociali e centri sanitari gestiti da organizzazioni non governative. Il sangue venoso è stato raccolto da tubi sterili, che sono stati lasciati a riposo a temperatura ambiente per ottenere il siero. I test HBV e HCV utilizzati sono stati delle strisce reattive cromatografiche rapide per la lettura visiva per la rilevazione qualitativa degli anticorpi e/o degli antigeni (DiaSpot HBsAg e DiaSpot HCVAb). È stato inoltre applicato un questionario faccia a faccia per la raccolta di informazioni socio-demografiche e comportamenti sessuali. Risultati: 153 partecipanti sono stati inclusi nello studio; la maggior parte di loro (58,82%) erano della regione litoral e di sesso femminile (55,56%). La principale disabilità è stata quella motoria (53,59%) seguita da carenze sensoriali (24,84%). La maggior parte di queste sono state disabilità acquisite (61,39%) apparse principalmente dopo un incidente stradale o vascolare cerebrale. Più di 1/2 degli intervistati ha avuto almeno un partner sessuale regolare e circa 1/3 ha avuto un partner sessuale occasionale negli ultimi sei mesi. Meno della metà degli intervistati ha dichiarato di aver avuto rapporti sessuali a rischio e solo il 30,77% ha dichiarato di usare sempre il preservativo durante i rapporti sessuali. Il 5,23% (n=8) e il 3,27% (n=5) dei partecipanti erano rispettivamente positivi all'epatite B e C. Conclusioni: L'HBV e l'HCV potrebbero essere molto diffusi tra i disabili in Camerun. Abbiamo notato che l'attività sessuale è reale e rischiosa tra la popolazione oggetto del nostro studio. Per affrontare questa vulnerabilità, è importante intensificare gli sforzi per rafforzare il livello di conoscenza dell'impatto sulla salute dell'HBV e dell'HCV.

Introduction

Hepatitis viral infections are one of major threat to public health worldwide. Hepatitis viral infections especially hepatitis B virus (HBV) hepatitis C virus (HCV) infections are generally associated with other virus infections such as human immunodeficiency virus

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(HIV),1-4 mainly due to their common routes of transmission.5 Indeed, the HIV and hepatitis viruses B and C are transmitted through the same main routes such as blood, unprotected sexual intercourse and from mother to the child, thus favoring co-infection.3-5

Because of this, the HIV and its virulence does not represent the unique health threat in infected patients,1,5 there are also other viruses that are worrying in their expansion and evolution, such as HBV and HCV.3,4 Hepatitis B and C viruses can be the cause of acute or chronic diseases with a risk of evolution toward severe diseases such as cirrhosis and hepatocellular carcinoma.3,4 The vast majority of people infected with viral hepatitis are found in resources limited countries of Africa and Asia.6,7 There is a lack of accurate data to better determine the burden disease in Africa and HIV-HBV and HIV-HCV co-infection is generally unnoticed in routine medicine.3,4

In Cameroon, available data on sentinel populations reveal a prevalence of hepatitis with variations as follows: HBsAg of 12% [5 - 25%] and anti-HCV antibody 13% [2 - 50%].8,9 The HIV prevalence in the general population is 4.3%,9 and it was noted that 7% of infected patients remained unaware of their HBV and HCV serological status.8,9 In 2016, it was estimated in Cameroon that 11.6% and 0.7% of persons infected with HIV had serological markers indicating an infection or previous contact with HBV and HCV respectively.8-10

Disability is part of human condition, practically everyone, at some point of life, will have a temporary or permanent deficiency, and who will reach an advanced age will experience increasing functional difficulties.11 According to the third General Population and Housing Census, 5.4% of the population live with disability in Cameroon.12-14 In addition to functional deficit that affects their lives quality, people with disability (PwD) are victims of several injustices including access to health care.12,13 To our knowledge, the proportion of PwD with HIV is not clear and they have never been subject of HBV, HCV screening to determine the prevalence of these infections. However, in view of their socio-economic status, PwD may be risky group for sexually transmitted infections including hepatitis B and C. This situation is a real concern that requires an appropriate response when considering HBV and HCV sero-prevalence in the general population.9 Thus, the aim of this study was to estimate the prevalence of HBV and HCV viruses among PwD of Cameroon.

Study area

This study was conducted in three regions of Cameroon: West (Dschang); Center (Yaoundé) and Littoral (Edéa). These three regions were chosen as study sites because of the high seroprevalence of HCV and HBV infections and the number of people with disabilities: Dschang (West) 11.2%, 9 Yaoundé 9.2%, 9 and Edéa 5.3%.9 With total population estimated at 120207, 1881876 and 73128 inhabitants respectively, the city of Dschang is composed of two communes, Yaoundé, six communes and Edéa, 2 communes. These communes also correspond to administrative subdivisions, which constitute districts in where there are health districts.

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The particularity of these three cities is that their population grow exponentially due to rural exodus exacerbated mostly because of the growing poverty.

Material and Methods

Study design and populations

A cross-sectional study was conducted among persons suffering from disability registered in three regions of Cameroon (West, Center and Littoral regions) from January to November 2018. Participants were enrolled from the social centers and health care centers run by non-governmental organization.

Study procedures

After informed consent was obtained, venous blood was collected from sterile tubes containing tripotassic EDTA. The tubes were left at rest in ambient temperature for around four hour to obtain the serum, then; two drops of serum were deposited on the appropriated space of each test. The two hepatitis (HBV and HCV) tests used were rapid chromatographic immunoassay test strips for visual reading, for the qualitative detection of antibodies and/or antigens. HBV and HCV screening were done according to the manufacturer's instructions. For HBV and HCV screening, DiaSpot HBsAg One Step Hepatitis B Surface Antigen Test Strip Package Insert®" and DiaSpot HCVAb test STRIPS® were respectively used (sensitivity 99% and specificity 98%). The results were read after 15 minutes. The tests with a test line colored in red were read as positive. A questionnaire was also applied face-to-face for the collection of socio-demographic information and sexual behaviors. Collected data were entered into the computer and analyzed by descriptive and analytical statistical methods using Microsoft Excel and Epi Info version 7.

Ethical considerations

Necessary disposition were taken to ensure the participants confidentiality during the study. Data from this study were used strictly for study purpose; that it is why blood samples and data collection stools were coded. This study obtains an ethical approval for the CNERSH of Cameroon, N° of reference: 2018/05/1027/CE/CNERSH/SP.

RESULTS

Socio-demographic characteristics

In all, 210 people were recruited of whom 57 refused to participate in the study (the main reason was the refusal to be tested). Of the final 153 participants retained for the study, the majority (58.82%) were from the Littoral region and female (55.56%). The mean age

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of participant was 37 years (SD ±17.05) and married participants (including cohabitant), was the most represented in the study population.

Disability history

The main disability was motor (53.59%) followed by sensory deficiencies (24.84%). A small number of participants (5.88%) had more than one types of disabilities mostly (77.78%) were motor with sensorial (Table 2). Concerning the date of onset of the disability, it appears that the majority of the participants have had disability during their lifetime (88.89%). Most of these acquired disabilities (61.39%) mainly appeared after a cerebral vascular or road accident (Figure 1).

Sexual behaviors of the study participant

Table 2 presents the sexual behaviors of the participant. It appears that more than half of respondent (58.17%) had at least one regular sexual partner and about a third of the participant (24.84%) had an occasional sexual partner during the last six months. Less than half (47.06%) declared had risky sex intercourse in the past 6 months. The table 3 reveals that the majority of participant (53.7%) who had regular sexual partner did not used condom during sex intercourse. Only 30.77% with occasional sexual partner declared use always condom during sex intercourse. Male condom was most preferred among sexually active participant (48.37%).

HBV and HCV prevalence's

Among the participant screened 5.23% (n=8) and 3.27% (n=5) were respectively positives for Hepatitis B and C. the co-infections of HIV/HBV was 12.5% and the co-infections of HIV/HBC was not found (Table 4).

Table 1: Socio-demographic characteristics data of study participant

Characteristics	**Frequency**	**Percentage** (%)
Sex		
Male	68	44.44
Female	85	55.56
TOTAL	**153**	**100**
Mean age of participant (years)	37 SD ±17.05	
Place of residence		
West	48	31.37
Littoral	90	58.82
Center	15	9.8
TOTAL	**153**	**100**
Marital status		
Married	74	48.37
Single	73	47.71
Divorced/ Widow/er	6	3.92
TOTAL	**153**	**100**

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Table 2: Sexual behaviors of study participant		
Variables	**Frequency**	**Percentage (%)**
Number of sexual regular partner in the last 6 months		
Don't have sex partner	45	29.41
One sex partner	89	58.17
Two sex partners	16	10.46
More than two sex partner	3	1.96
Total	**153**	**100**
Number of occasional sex partner in the last 6 months		
Don't have sex partner	101	66.01
One sex partner	38	24.84
Two sex partners	13	8.5
More than two sex partners	1	0.65
Total	**153**	**100**
Number of risky sex intercourse in the last 6 months		
No	81	52.94
Yes	72	47.06
Total	**153**	**100**

Table 3: Type and use of condoms during sex intercourses		
Variables	**Frequency**	**Percentage (%)**
Use of condom with regular sex partner*		
Never	58	53.7
Rarely	21	19.44
Most of time	12	11.11
Always	17	15.74
Total	**108**	**100**
Use of condom with occasional sex partner°		
Never	18	34.62
Rarely	8	15.38
Most of time	10	19.23
Always	16	30.77
Total	**52**	**100**
Type of condoms preferred		
Male	74	48.37
Female	1	0.65
Not user*	78	50.98
Total	**153**	**100**

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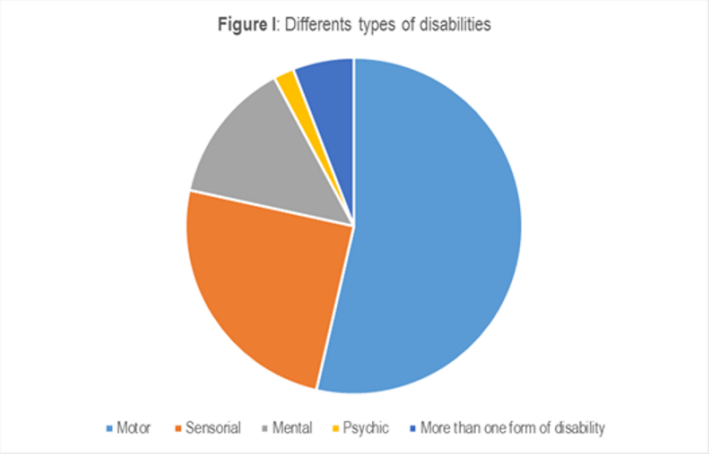
Table 4: Seroprevalence of HBV and HCV among participants

	HBV result	**HCV result**			
HIV Statut	Negative (%)	Positive (%)	Negative (%)	Positive (%)	**Total** (%)
Negative (%)	132 (91.03)	7 (87.5)	134 (90.54)	5 (100)	**139 (90.85)**
Positive (%)	13 (8.97)	1 (12.5)	14 (9.46)	0	**14 (9.15)**
Total N (%)	**145 (100)**	**8 (100)**	**148 (100)**	**5 (100)**	**153 (100)**



DISCUSSION

With the goal to improve the prevention, care and treatment of major viral infectious diseases among disable persons in resource-limited settings; our study enabled the identification of driven factors of infections of viral hepatitis B and C among individuals suffering from disabilities.

In this study, educational level and monthly income were not assessed. Without these two parameters, we are not able to evaluate the social vulnerability of the study participant include the practice of risky sexual intercourses. Sexual behaviors constitute risk and vulnerability factors able to explain the non-negligible level of prevalence of hepatitis viral infections found in our study population. It is established that multiple sexual partners and not using condom during sexual intercourses are risky factors of sexually transmitted infections (STIs).16-18 The high prevalence HBV and HCV may be a result of the multiple sexual partners, including having sexual intercourses with someone who has multiple sexual partners. This suggests that, sensitisation campaigns about HIV/AIDS and risky behaviours must be intensified in group of persons.

To investigate condom usage, participants were asked to estimate the frequency of condom usage with their regular and irregular sex partners. 30.77% of respondents, both sex and married or singles, indicated they always use a condom during sexual intercourses with their irregular sex partner. This was different from findings reported in other population groups,19 were the majority of respondents declared systematically used

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condom. This confirms that PwD are not better informed about STIs routes of transmission and the increase in risk of transmission during unprotected sexual intercourses.

STIs status knowledge of participants were low, 11.76% for HBV and 9.15% for HCV. This result appears as another sexual risky factor of PwD compared to the general population and contradicts the general observation. In fact, several studies conducted these last past years in Cameroon indicate a STIs knowledge well above average, whether it was in the general population or in the specific groups of persons.20

Data on the HBV and HVC prevalence in the study population provide evidence against social prejudices presenting this target as sexually inactive. We note that the levels of HBV and HCV prevalence's are in the range of the prevalence in the general population (4.3%), 8,9 this seems inform on the risk-taking behaviors in which they would be involved even if the prevalence of HBV and HCV were lower compared the sentinel population.[9]

In our knowledge there are not studies that had explored the question of HBV and HCV prevalence among PwD. So there is crucial lack of data and information to better understand and research the adequate analysis mode. But it seems that the trends is at a lower prevalence level than the general population.[9]

CONCLUSION

HBV and HCV might be high prevalent among disable individuals in the Cameroonian setting. In fact, the population representations in relation to PwD are elements that weaken the sexual experience of these people exposing them to increased sexual risk taking. We noted that sexual activity is real and risky among our study population unlike social consideration that reports a sexual emptiness in these people. To deal with this vulnerability, it is important to intensify the efforts for reinforcing the level of knowledge on the HBV and HCV health impact of PwD. Finally, findings of this study should be used as advocacy stool for the promotion of an inclusive and participative approach to fight STIs with the objective to stop the disease progress in this group of person.

Study limitations

The recommended sampling methods in social studies are non-probabilistic when there is not a statistic data base.15 In Cameroon, available data on the last General Population and Housing Census did not take into account disability as analysis variable, hence the difficulty of making a random sample. That is why we choose to use exhaustive sampling of all PwD, which is a method to overcome the problem of lack of sampling frame.

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