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REVIEW

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Screening for hepatitis C in urgent and emergency units: a systematic review

Triagem para hepatite C em unidades de urgência e emergência: revisão sistemática

Tamizaje de la hepatitis C en unidades de urgencia y emergencia: revisión sistemática

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ABSTRACT

Objective: Identifying studies that performed screening for hepatitis C and that also assessed the virus prevalence in urgency and emergency unit users. **Method:** A systematic review performed on the LILACS, MEDLINE databases via PubMed, SciELO and Virtual Health Library. **Results:** After careful search and analysis, 19 publications were part of the results, in compliance with the pre-defined criteria. Publication dates were concentrated between 1992 and 2018. The main journal to publish such articles was the Annals of Emergency Medicine (26.31%). Regarding the origin of publications, the following stand out: United States (63.15%), Europe (31.57%), and Asia (5.28%). Regarding prevalence, in the United States, a variation between 1.4% to 18% was observed. In Europe, in turn, the prevalence ranged from 0 to 5%. In the Asian study, the prevalence was 1.8%. **Conclusion:** The screening performed in urgent and emergency units proved to be efficient in identifying new cases, especially when associated with the age factor, which proves to be superior to the strategy based only on risk factors. Thus, for greater effectiveness, the association of three strategies is recommended: screening location, age group, and risk factors.

DESCRIPTORS

Hepatite C; Mass Screening; Ambulatory Care; Prevalence; Systematic Review.

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INTRODUCTION

Recently, it was estimated that 170 million people worldwide were infected with the hepatitis C virus (HCV)[1]. This estimate is currently 71 million people with HCV infection in the global population[2].

A survey that assessed hepatitis C prevalence in Brazilian capitals identified a rate of 1.38% in the age group of 10 to 69 years old[3]. The current prevalence, however, is estimated to be at 0.7%[4].

The Ministry of Health recently launched a plan to eradicate hepatitis C by 2030, based on the World Health Organization (WHO) recommendations[5-6].

This campaign aims to identify patients infected with the virus and, with treatment, prevent the main complications related to the disease, such as liver cirrhosis, hepatocarcinoma and the need for transplant[6].

One of the biggest difficulties regarding this goal is to identify new individuals infected with the virus. A few years ago, screening studies in hospital units were questioned, due to the possibility of bias. However, especially for hepatitis C, the current consensus is that screening tests should be used in places where patients are. In this perspective, although still few, several studies have followed this strategy.

Seroprevalence studies have shown very high rates of antibody positivity to HCV (13% to 18%) in some urban populations of urgency and emergency units[7-8].

Urgency and emergency units act as health care networks for patients with difficult access, who do not seek medical care services outside this unit. This location has been shown to be effective, both for the population of specific age groups for screening, and for the rest of the population[9].

Nowadays, patients with hepatitis C in Brazil have guaranteed access to a therapeutic arsenal capable of healing in approximately 95% of cases. However, making the diagnosis is a necessary prerequisite to offer these treatments and proper screening supports the cascade of treatment[10].

Considering that hepatitis C represents a major public health challenge, this research aims to identify studies that screened for hepatitis C and assessed virus prevalence in urgent and emergency units.

METHOD

Type of study

This is a systematic literature review. The PRISMA recommendations, which value the systematic review quality, were used to improve the review results.

Selection criteria

Studies that assessed hepatitis C prevalence in urgent and emergency units were included. Studies that showed a diverse population were considered, including a research that used a sample according to the age cohort "baby boomers".

While conducting the research, one systematically sought to identify articles in different databases that answered questions such as: what is the average rate of publications related to hepatitis C diagnosis in urgent and emergency units, and what is the HCV prevalence in these care units?

The results to be expressed in this research deal with the use of a new strategy based on the screening site, which according to numerous authors, can, in a sensitive way, contribute more effectively with the identification of people infected by HCV.

Since this is a survey of observational studies, this review was based on the Ministry of Health recommendations. The research was based on the acronym PECO, with P being the population of interest (urgent and emergency service users), E being exposure (population that was exposed to screening methods for the HCV), C being control, which was used for study the control-case and finally the outcome O, that is, outcome, which, in this case, was HCV prevalence in the population described[11]. The study followed the steps: identification of the theme, research questions and objectives; definition of databases and criteria for inclusion and exclusion; definition of the information to be extracted and categorization; assessment of studies included in the review by different researchers and interpretation of results; presentation of the review and synthesis of knowledge[12].

There were no restrictions on the language of publication. Data collections took place from January to September 20, 2018.

For the qualitative assessment of the methods described in the observational studies, the STROBE tools were used for cohort, case-control and cross-sectional studies[13].

Prevalence studies that assessed the screening method according to location were considered eligible. The inclusion criteria involved people of any age, as long as they are cared for in the emergency room.

Data collection

The databases used in the electronic search were: Latin American and Caribbean Health Sciences Literature (LILACS – *Literatura Latino-Americana e do Caribe em Ciências da Saúde*), Medical Literature Analysis and Retrieval System (MEDLINE), Scientific Electronic Library Online (SciELO), and Virtual Health Library (VHL), through the website www.bvsalud.org. It should be noted that the VHL is part of the Cochrane Library, the Spanish Bibliographic Index of the Health Sciences (IBECS – *Índice Bibliográfico Espanhol de Ciências da Saúde*).

In order to search for articles, the descriptors standardized in MeSH (PubMed) and in health sciences (DeCS) were used. In MEDLINE, descriptors were used in English and in LILACS and SciELO Portuguese-Spanish (Chart 1).

Highly sensitive search strategy and Boolean terms and operators (OR, AND, NOT) were applied according to the database compatibility.

Chart 1 – Search strategies established for the PubMed database.

1.Hepatitis C* AND Emergency Department* AND Triage*
2. Hepatitis C* AND Mass Screening* AND Emergency Department*
3. Hepatitis C* AND Screening* AND Emergency Department*

Analysis and treatment of data

Two evaluators separately read the titles and abstracts of each pre-selected reference, in order to identify only those studies that correctly met the inclusion criteria. The articles were read separately, in order to ensure the criteria for systematic review. In case of disagreement among the two reviewers, a third one assessed the manuscript and, by consensus, the decision for inclusion was made. The analysis of the studies according to the level of evidence was based on Oxford Center Evidence-Based Medicine, being IIB cohort studies with poor quality of randomization, control type study, study without long term follow-up and also cross sectional cohort study. The degree of evidence was obtained from the individual analysis of the methodological designs used in the studies.

The selected studies were inserted and organized in a spreadsheet of Microsoft Office Excel (2013), with certain items of importance for the research, such as title, objectives, year of publication, journal, study design and outcomes.

RESULTS

With the descriptors used, 89 articles were identified in the PubMed database. No articles were found in the LILACS and SciELO databases.

After assessing the titles and abstracts, considering the inclusion criteria, 19 articles were selected and 70 were excluded because they did not meet the pre-established criteria. All selected articles were published in the English language.

Publication dates were concentrated between 1992 and 2018, with a 26-year interval between the first and the last publication. The average number of publications was 2.37/year.

Regarding the number and prevalence of publications per year, it is observed that in 2018, three studies (15%) have been published so far, in 2016 there were seven studies (35%). In turn, in 2015, two studies (10%) followed by three (15%) in 2014. For the other years (2012, 2002, 1999, 1992), only 1 study (5.26%) was published.

Of the journals that received the most articles, the following stand out: Annals of Emergency Medicine represented with 5 publications (26.31%), PLoS One and Clinical Infectious Diseases presented two studies each (21.05%). The other journals received only 1 article each.

Information regarding the title, authors, country, year of publication and database are available in Chart 2.

Regarding screening according to the "baby boomers" age group, only four studies from the North American continent were identified. "Baby boomers" means the generation of people born after the second world war, that is, those who were born between 1945 and 1960.

In relation to publications according to their origin, the following are presented: United States of America (USA), with 12 publications (63.15%), Europe, with six (31.57%) and Asia, with only one publication (5.28%). Regarding prevalence, in the United States, a variation between 1.4% to 18% was observed. In Europe, in turn, the prevalence ranged from 0 in a screening service for migrants to 5.05%. In the Asian study, the prevalence was 1.8%.

Chart 2 – Characteristics of the studies included in the systematic review.

Title	Authors / Year	Journal	Design	Result/Outcomes	Database	Level of evidence
Hepatitis B and hepatitis C in emergency department patients	Kelen, et al; 1992[7].	N Engl J Med.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 18%	PubMed	IIB
Prevalence and risk factors associated with hepatitis C in ED patients	Brillman, et al; 2002[8].	Am J Emerg Med.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 17%	PubMed	IIB
A Comparative effectiveness study of two nontargeted HIV and Hepatitis C Virus Screening algorithms in an urban emergency department	White, et al; 2010[14].	Ann J Emerg Med.	Cross-sectional study (Prevalence)/ Comparative effectiveness study.	New diagnoses of hepatitis C by electronic method 101 (1.44%). New diagnoses of hepatitis C by using the traditional screening method 9 (0.30%).	PubMed	IIB
Implementation and preliminary results of an emergency department nontargeted, Opt-out Hepatitis C Virus Screening Program	Schechter-Perkins, et al; 2018[15].	Acad Emerg Med.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 13,2% Prevalence according to HCV-RNA of 7.7%.	PubMed	IIB
Prevalence of diagnosed and undiagnosed Hepatitis C in a midwestern urban emergency department	Lyons, et al; 2016[16].	Clín Infect Dis.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 14% HCV-RNA of 81%.	PubMed	IIB
Emergency department screening for Hepatitis C virus: geographic reach and spatial clustering in Central Alabama	Donnelly, et al; 2016[17].	Clín Infect Dis.	Prevalence/ retrospective study	Anti-HCV prevalence of 11.6%	PubMed	IIB
Evaluation of the centers for disease control and prevention Recommendations for Hepatitis C virus testing in an urban emergency department	Hsieh, et al; 2016[18].	Am J Emerg Med.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 13.8%	PubMed	IIB

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Title	Authors / Year	Journal	Design	Result/Outcomes	Database	Level of evidence
HCV among The Miriam Hospital and Rhode Island Hospital Adult ED Patients	Merchant, et al; 2014[19].	R I Med J.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 4.6%	PubMed	IIB
Unrecognized chronic hepatitis C virus infection among baby boomers in the emergency department	Galbraith; et al; 2015[20].	Hepatology.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 11.1%	PubMed	IIB
Hepatitis C virus infection in the 1945-1965 birth cohort (baby boomers) in a large urban ED	Allison, et al; 2016[21].	Am J Emerg Med.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 7.3%.	PubMed	IIB
Results of a Hepatitis C virus screening program of the 1945-1965 Birth Cohort in a large emergency department in New Jersey	Cornett, et al; 2018[22].	Open Forum Infect Dis.	Prevalence/ retrospective study	Anti-HCV prevalence of 6.3%	PubMed	IIB
Results of a Rapid Hepatitis C Virus Screening and Diagnostic Testing Program in an Urban Emergency Department	White, et al; 2016[23].	Ann Emerg Med.	Prevalence/ retrospective study	Anti-HCV prevalence of 10.3%	PubMed	IIB
Incorporating HIV/hepatitis B virus/ hepatitis C virus combined testing into routine blood tests in nine UK Emergency Departments: the "Going Viral" campaign	Orkin, et al; 2016[24].	HIV Med.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 2.46%	PubMed	IIB
High prevalence of hepatitis C (HCV) in the emergency department (ED) of a London hospital: should we be screening for HCV in ED attendees?	Orkin, et al; 2015[25].	Epidemiol Infect.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 2.6% Total prevalence after analysis of HCV-RNA of 1.2%.	PubMed	IIB
Screening for latent TB, HIV, and hepatitis B/C in new migrants in a high prevalence area of London, UK: a cross-sectional study	Hargreaves, et al; 2014[26].	BMC Infect Dis.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 0%	PubMed	IIB
Opt-Out Panel Testing for HIV, Hepatitis B and Hepatitis C in an urban emergency department: a pilot study	O'Connell, et al; 2016[27].	PLoS One.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 5.05%	PubMed	IIB
High prevalence of anti-HCV antibodies in two metropolitan emergency departments in Germany: a prospective screening analysis of 28,809 patients	Vermehren, et al; 2012[28].	PLoS One.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 2.6% Total prevalence after analysis of RNA-HCV 1.6%.	PubMed	IIB
Hepatitis C virus infection risk factors in patients admitted to hospital emergency departments in Picardy Value of oriented screening based on recommendations of the 'Direction Générale de la Santé'	Capron, et al; 1999[29].	Eur J Gastroenterol	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 2.4%	PubMed	IIB
Hepatitis B, Hepatitis C and HIV seroprevalence in critically ill emergency medicine department patients in a tertiary inner city hospital in Istanbul, Turkey	Ozturk, et al; 2014[30].	Pak J Med Sci.	Cross-sectional study (Prevalence)/ Descriptive analysis.	Anti-HCV prevalence of 5%	PubMed	IIB

Descriptive analysis according to the origin of the study

North America

The first publication identified on hepatitis C screening in emergency units was published by New England in 1992, involving 2,523 patients. This study found a prevalence of 18%. Hepatitis C was found in 145 of the 175 intravenous drug users (83%). Thirty-six of the 171 patients had a previous history of blood transfusion. Of the 24 homosexuals, five were positive for the HCV. Among black men aged 35-44 years, HCV seroprevalence was 51%[7].

In 2002, researchers from the School of Medicine at the University of New Mexico developed a study in the emergency department in order to assess the prevalence and risk factors associated with hepatitis C in this unit. People over the age of 18 who presented themselves for care had their blood drawn as part of the routine medical assessment. In addition to this sample, an extra tube for screening for

HCV was also collected. A case-control analysis was used to identify risk factors in HCV. Of the 223 blood samples, 38 (17%) were positive for antibodies to HCV. Previous use of injecting drugs was the most significant risk factor associated with HCV (OR 858.5, CI 61.8-22.026.5). The authors concluded that high HCV rates are identified in the urgency and emergency unit of urban centers. These researchers value the emergency unit as a strategic location for the identification of people infected by the HCV[8].

American researchers compared the effectiveness of two screening protocols for human immunodeficiency syndrome (HIV) and hepatitis C in an urban emergency department. Patients with laboratory requests for HIV research were automatically screened for HCV and vice versa. This study included patients between 18 and 75 years of age. The study concluded that an electronic algorithm, which automatically links HIV and HCV screening to laboratory requests for adult patients, is more effective than a clinical protocol guided by nurses, for example, in relation to risk factors[14].

Other studies in this line agree with the opportunity that the emergency unit presents for HCV screening. In this context, a three-month descriptive analysis (November 2016 to January 2017) of HCV screening among patients at least 13 years of age who underwent phlebotomy for clinical purposes was performed. An anti-HCV research was carried out on 3,808 patients. The proportion of positivity for the HCV test was 13.2% (504/3,808 and, of these, 97.8% (493/504) had an HCV-RNA test performed. A total of 292 patients had active infection, with a total HCV-RNA positivity rate of 7.7% (95% CI=6.8% -8.5%). Of those with active infection, 155 (53%) were outside the birth cohort of the Centers for Disease Control and Prevention to increase the risk of HCV, which consists of individuals born between 1945 and 1965[15].

In an urban center in the Midwest, researchers from a teaching hospital with 450 hospital beds and approximately 90,000 annual visits to the emergency unit, conducted a cross-sectional seroprevalence study. Nine hundred twenty-four patients aged between 18 and 64 years participated in the research. ANTI-HCV was identified in 128 samples (14%). Of these, 44 (34%) reported knowledge about positivity. One hundred and three patients (81%) were positive for HCV-RNA. Two additional patients were negative for ANTI-HCV, but with positive HCV-RNA. Screening based on the age cohort would have lost 36/128 (28%) of cases with detectable antibody and 26/105 (25%) of those with active viral infection. The authors conclude that screening for hepatitis C in the emergency department is a strategy to be adopted and that if they had been guided by screening based on the birth cohort, they would have missed a considerable number of positive tests[16].

In Alabama, researchers examined the results of HCV screening in the emergency department. This research was carried out at the University of Alabama, in Birmingham. This institution routinely performed the screening of hepatitis C in the population "baby boomers"and also in high-risk (intravenous drug users). Patients already diagnosed[17] were excluded from the study Eight thousand seven hundred and fourty-two tests were carried out. Of the total sample, 6,888 were born between 1945 and 1965 (79%). The overall prevalence was 11.6%. The authors argue that emergency room screening is adequate and that it has the capacity to impact the HCV epidemic across the broad geographic area[17].

Continuing the screening strategy in specific units, other researchers carried out a prevalence study using samples from 4,713 emergency service users in an urban center, identifying a prevalence of 13.8% (652). Of these, 204 (31.3%) did not provide any records regarding HCV infection. Of the patients with undocumented infection, 99 (48.5%) were diagnosed based on the birth cohort and 54 (26.5%) by tests based on risk factors. The authors concluded that if the screening was performed following the guidelines by age group, 51 (25%) of HCV patients would not be tested[18].

In 2014, researchers estimated HCV prevalence in adult patients, as well as among patients with any report of injecting drug use in an island hospital in the USA. The HCV test positivity rate among 8,500 adult patients was 4.6% and the anti-HCV seroprevalence among 621 adult patients who used drugs was 1.6%. Among the ten patients diagnosed with positive HCV not previously diagnosed, eight were born after 1965 and six never received injectable drugs[19].

Other studies have assessed HCV prevalence in urgent and emergency units based on the age group. In 2015, they carried out one of the first surveys for HCV screening, following the CDC's recommendations regarding the "baby boomers". 1,529 individuals participated in the research, of which 170 (11.1%) were reagents for HCV. HCV-RNA was performed on 150 patients (88.2%), of which 102 (68.0%) were confirmed. Seroprevalence was higher in men than in women (14.7% versus 7.4%, P <0.001) and in Afro-descendants when compared to whites (13.3% versus 8.8%, P=0.010)[20].

Another study that also followed the age-based screening recommendation, approached a total of 915 patients for screening for the HCV. Of these, 427 participated in a structured interview and 383 agreed to conduct a rapid test. HCV prevalence was 7.3%. Misconceptions were observed regarding the knowledge of disease transmission among the researched population[21].

Regarding "baby boomers", a retrospective cohort study of patients born between 1945 and 1965 tested for HCV was carried out in an emergency unit outside the urban center of New Jersey. The objective was to assess HCV infection prevalence and to analyze the characteristics associated with positive results. Of a total of 3,046 patients, 192 were positive for antibodies (6.3%). Of the 167 with viral load test results, 43% were viremic[22].

In California, researchers conducted a retrospective study in the emergency department of an inner city hospital, which performs around 90,000 visits per year. The objective of the research was to assess a hepatitis C test program from the age cohort and also from the risk history. Patients born between 1945 and 1965 participated in the study. Of the 26,639 adults aged 18 years and over who came to the emergency department in the last 6 months, 2,581 (9.7%) completed the criteria for screening for HCV, of which,

267 had positive antibodies, resulting in a prevalence 10.3%. The use of injecting drugs, homeless people, age and male gender were identified as risk factors. The research argued that efforts to develop policies for screening the HCV in emergency units should be permanent[23].

Europe

A study carried out in the United Kingdom described the results of a screening program for HIV and also for hepatitis B and C called "Going Viral". This campaign took place in October 2014 in nine emergency departments, which used to have a high HIV prevalence. Screening tests were offered to patients who received blood products as part of routine treatment. A total of 7,807 patients had blood collected during their visit to the emergency unit. Regarding HCV, 39 cases were identified, 15 of which were newly diagnosed. There were 17 HIV infections (6 newly diagnosed) and 15 HBV infections (11 newly diagnosed). The authors concluded that, through a detection campaign, it was possible to identify new cases of viral diseases of public importance, encouraging that screening in emergency units seems to be a good strategy for screening different viral diseases simultaneously[24].

In the United Kingdom, other researchers, from 997 samples taken over 12 days for HCV antibody detection and also for HCV RNA, identified an anti-HCV prevalence of 2.6% (26/997), with 1.2% for the RNA[25].

In 2016, still on the British setting, researchers performed screening for tuberculosis, hepatitis B and C viruses in two different emergency departments. This movement was articulated given the significant increase in immigrants. The intervention increased the diagnosis of latent tuberculosis, however no cases of HIV or hepatitis B/C were found[26].

In Ireland, researchers have assessed the feasibility and acceptability of a universal HIV, hepatitis B and C exclusion program in an emergency department of a large hospital, in patients aged 18 years and over. The authors also described the incidence and prevalence of the aforementioned morbidities. Patients were subjected to blood sampling during routine clinical treatment. With more than 45 weeks of testing, 8,839 individual samples were made available for analysis. The incidence of HCV was 6.5 per 1,000 inhabitants with a prevalence of 5.05%. The research concluded that screening for viral diseases is a viable and acceptable strategy in emergency units[27].

In Germany, HCV seroprevalence was assessed in patients who visited two tertiary emergency services in Berlin and Frankfurt, respectively. A total of 28,809 patients were screened for the identification of anti-HCV antibodies. The positive anti-HCV sera were subsequently tested for HCV-RNA. The overall HCV seroprevalence was 2.6%. HCV-RNA was detectable in 68% of positive anti-HCV cases. Chronic HCV infection prevalence in the total study population was 1.6% (95%CI: 1.5-1.8). The most prevalent risk factor was the use of injectable drugs (31.2%). The youngest population in the sample was responsible for presenting the main risk factor for HCV ($p < 0.001$) and the male-female ratio was 72% (121 versus 46 patients, $p < 0.001$). Finally, 18.8% of HCV-RNA positive patients were not previously diagnosed[28].

In France, other researchers have estimated the frequency of risk factors in patients admitted to the emergency unit of seven hospitals in Picardy. Among the 1,648 patients, 68.7% had at least one risk factor. Screening was accepted by 723 patients, of which 58.7% reported at least one risk factor, 70% with a history of previous blood transfusion or use of injectable drugs. Screening in 451 users showed that 2.4% had positive anti-HCV. Anti-HCV prevalence was 1.5% in patients with no history of transfusion or drug use and 7.9% in those with at least one of these two risk factors. The study concluded that a screening based on risk factors such as blood transfusion and use of injectable drugs, seems to have a better efficiency[29].

Asia

A study assessed the prevalence of hepatitis B, hepatitis C and HIV in patients with critical clinical diagnosis, classified in red in the emergency department of a tertiary hospital in Istanbul, Turkey. One thousand patients participated in the research. Of these, 50 were positive for HBV (5%), 18 for HCV (1.8%) and 2 with HBV-HCV co-infection. HIV was not registered. Forty-one of these patients were trauma victims, 226 were unconscious or uncooperative. Ninety-two patients (9.2%) had a history of blood transfusion and among these, 11 had a diagnosis of HBV and 3 of HCV. The study concluded that seroprevalence in the study group was very low, relating the result to the Turkish literature[30].

DISCUSSION

From the analysis of all studies, it is evident that the screening for hepatitis C is a trend, which should transcend the geographical regions mentioned here.

It is well known that the United States has the largest number of publications and this shows the country's concern with facing hepatitis C, especially with the potential complications.

In Brazil, no publication has yet been identified that would fulfill the purpose of this review.

Several strategies have been adopted in order to identify people infected with HCV, many of them elaborated and encouraged by the Center Disease Control, as an example the strategy of the "baby boomers", that recommends that people born between 1945 and 1965 perform the diagnostic test, as they understand that this population has a high risk of presenting the hepatitis virus[18].

Some studies have adopted this measure, added to the strategy related to the test site, in this case the emergency room. The studies presented herein reported a prevalence that ranged from 6.5 to 11%[18-21].

Although until now, publications related to the screening of HCV in emergency units have not been identified in Brazil, a survey carried out in a Basic Health Unit in the state of Paraná, identified a prevalence also below what was expected (0.30%), being more common in the population aged 40 years or older[31].

There is a great deal of debate as to which screening method is most appropriate. It is an intriguing question, difficult to answer because of the scarcity of publications. However, different methods are necessary, since in the USA it is estimated that 43% to 72% of HCV infections are not diagnosed[32-34]. Furthermore, of the total population of individuals infected with HCV in a high-income country, only 34% are part of a high-risk group, that is, they are more accessible to screening[35].

A systematic review of the different methods used for the recognition of infected people identified, from 7,052 studies, 67 screening programs. Of these, 41 were integrated into health services. The authors concluded that the highest HCV prevalence was found in programs in countries with intermediate prevalence for HCV, in psychiatric clinics and in programs that used a pre-screening selection based on risk factors for HCV[36]. This study brought in its scope few studies that used the emergency unit as a strategic location, part of it is justified because it was published in 2014 and most of those who used emergency units were published in 2016[36].

In view of the results expressed herein, it is suggested that the combined method, combining screening based on risk factors, age group and location of performance, seems to be the most appropriate to the current epidemiological reality. This statement is the sum of studies that used emergency care with the inclusion of different age groups and risk factors and also for those that used the emergency unit with the "baby boomers" policy. In a study that used the emergency unit as a strategy plus the age group policy and the known risks, one observed that 79% of the positive results were linked to those born between 1945 and 1965[17]. Another justification for carrying out the screening in an emergency unit is the possible geographic reach capacity that this unit has[14]. On the other hand, restricting screening for hepatitis C to the age group, may be responsible for losing around 25% to 45% of infected patients[16-17].

To detail which method would be most appropriate, some important points should be discussed. Several studies have their protocols well defined, some use the age group plus known risk factors, others only the age group. In addition to the protocol methodology, there are elements in this process that are fundamental to the success of the method: the way exams are offered. Authors describe that many screening nurses offered HCV testing to more than 2,000 patients outside the birth cohort and whose status regarding injecting drug use was unknown. They also emphasize that many doctors order HCV tests based on their training criteria. This type of judgment is at the mercy of making mistakes and failing to identify new cases[23].

To fulfill the screening criteria, minimizing supply bias, researchers defend greater effectiveness in detecting HCV using an electronic medium[14]. The automated laboratory screening algorithm analyzed more than 33% of emergency department patients eligible for HCV compared to less than 20% of patients with the hepatitis C virus tracking algorithm[14,30].

With this review, one sought to present the panorama on publications related to the screening methods used to identify new patients with hepatitis C. To date, no national publications related to the topic have been found to describe and support, or not, the best practices in the country. New research must be carried out, with a view to establishing practices that are sensitive to the health needs of the population.

CONCLUSION

The screening performed in urgent and emergency units proved to be efficient in identifying new cases, especially when associated with the age factor, which proves to be superior to the strategy based only on risk factors. Thus, for greater effectiveness, the association of three strategies is recommended: screening in urgent and emergency units, based on the age group and identification of risk factors.

RESUMO

Objetivo: Identificar estudos que realizaram rastreio para hepatite C e que também avaliaram a prevalência do vírus em usuários de unidades de urgência e emergência. **Método:** Revisão sistemática realizada nas bases de dados LILACS, MEDLINE via PubMed, SciELO e Biblioteca Virtual em Saúde. **Resultados:** Após criteriosa busca e análise, fizeram parte dos resultados 19 publicações, essas em conformidades com os critérios pré-definidos. As datas de publicação se concentraram entre 1992 e 2018. A principal revista a publicar tais artigos foi a *Annals of Emergency Medicine* (26,31%). Em relação à origem das publicações, destacam-se: Estados Unidos (63,15%), Europa (31,57%) e Ásia (5,28%). Em relação à prevalência, nos Estados Unidos, se observou uma variação entre 1,4% e 18%. Por sua vez, na Europa, a prevalência variou de 0 a 5%. No estudo asiático, a prevalência foi de 1,8%. **Conclusão:** O rastreio realizado em unidades de urgência e emergência se mostrou eficiente na identificação de novos casos, especialmente quando associado ao fator idade, que demonstra ser superior à estratégia baseada apenas em fatores de risco. Assim, para maior efetividade, recomenda-se a associação das três estratégias: local do rastreio, faixa etária e fatores de risco.

DESCRITORES

Hepatite C; Programas de Rastreamento; Prevalência; Assistência Ambulatorial; Revisão Sistemática.

RESUMEN

Objetivo: Identificar los estudios que realizaron pruebas de detección de hepatitis C y que también evaluaron la prevalencia del vírus en usuarios de unidades de urgencia y emergencia. **Método:** revisión sistemática realizada en bases de datos LILACS, MEDLINE a través de PubMed, SciELO y la Biblioteca Virtual en Salud. **Resultados:** Después de una cuidadosa búsqueda y análisis, 19 publicaciones fueron parte de los resultados, estos cumplieron con los criterios predefinidos. Las fechas de publicación se concentraron entre 1992 y 2018. La revista principal para publicar dichos artículos fue el *Annals of Emergency Medicine* (26,31%). En cuanto al origen de las publicaciones, destacan las siguientes: Estados Unidos (63,15%), Europa (31,57%) y Asia (5,28%). Con respecto a la prevalencia, en los Estados Unidos, se observó una variación entre 1.4% y 18%. En Europa, a su vez, la prevalencia varió de 0 a 5%. En el estudio asiático, la prevalencia fue de 1,8%. **Conclusión:** La evaluación realizada en las unidades de urgencias y emergencias demostró ser eficiente en la

identificación de nuevos casos, especialmente cuando se asocia con el factor de edad, que demuestra ser superior a la estrategia basada solo en factores de riesgo. Por lo tanto, para una mayor efectividad, se recomienda la asociación de las tres estrategias: ubicación del examen, grupo de edad y factores de riesgo.

DESCRIPTORES

Hepatitis C; Tamizaje Massivo; Prevalencia; Atención Ambulatoria; Revisión Sistemática.

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