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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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NURSES' KNOWLEDGE ABOUT HEPATITIS C VIRUS IN BAGHDAD TEACHING HOSPITALS: A CROSS-SECTIONAL STUDY

Zahraa M Alzubaidi[1]*, Wafaa M. A. Al-attar[2].

[1]*MSc. pharmaceutical analysis, Centre for Drug Delivery Technology, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur, Malaysia.*

[2]*Prof. Dr. Adult Nursing, College of Nursing, Al-Bayan University, Baghdad, Iraq.*

Abstract.

Aim: Hepatitis C virus infection (HCV) considered one of the main reasons in Iraq to cause chronic liver disease, which may progress to life-threatening outcomes. Nurses' knowledge about the HCV will impact their practice of standard precaution when managing HCV patients. The present study aimed to assess the nurses' knowledge about HCV in Baghdad teaching hospitals.

Method: A cross-sectional descriptive study was performed via distribution of HCV info questionnaires to 150 nurses in three Baghdad teaching hospitals (Al-Kindi, Al-Elwyia pediatric and Sheikh Zayed hospitals). The questionnaire format consists of nurses' demographic data (age, gender, educational level, marital status, years of experience in hospital, workplace in hospital, attending training courses and information sources) and nurses' knowledge of hepatitis C virus (nature of the disease, transmission, prevention, and treatment).

Results: The mean score of the knowledge showed fair grade with 66.66%± 12.9%. As the highest correct percentage displayed in nature of the disease (73%) and treatment (72%). Whereas the lowest correct percentage presented in transmission (69%) and prevention (48.3%). The results exhibited significant difference between the nurses' knowledge about treatment with the information sources ($P<0.05$), about transmission and prevention with the hospital workplace ($P<0.05$), and about prevention with the educational level ($P<0.005$).

Conclusion: Continuing educational programs are essential to increase awareness of HCV among the nurses.

Key words. Hepatitis C virus, nurse knowledge, Iraq.

Introduction.

Globally hepatitis C virus (HCV) infection considered one of the main reasons of chronic liver disease, which may progress to life-threatening outcomes, such as cirrhosis and hepatocellular carcinoma (HCC) [1]. In Iraq, it has been proved that 25% of HCC patients were due to HCV infection [2]. HCV may also lead to liver transplantation, as 4.9% of the of the Iraqi children who need liver transplantation were progressively infected with HCV [3]. It also associated with extrahepatic manifestations including type 2 diabetes mellitus, glomerulopathies and non-hodgkin's lymphoma, which have detected in Iraqi peoples with 0.53%, 6.3% and 10%, respectively [4-6].

Early HCV detection using qualitative and quantitative assays, and adequate treatment using direct-acting antivirals drugs, are vital to achieve a sustained virologic response and to ease World Health Organization ambitious goal of HCV elimination by 2030 [7]. However, low public knowledge about HCV diagnosis and management, will inversely effect patients' recovery.

Professional nurses have huge impact in limiting HCV spread and providing adequate handling and treatment to the infected patients via using their knowledge and expertise. Low HCV public awareness make the nurses an ideal cost-effective destination for the patients to seek advice or assistance from [8]. However, numerous studies around the world have indicated low nurses' awareness about HCV which led to continue HCV transmission and overlook prevention and treatment opportunities [9].

The aim of this study was to assess the nurses' knowledge about HCV nature, transmission, prevention, and treatment via answering to an HCV info questionnaire in Baghdad teaching hospitals.

Materials and Methods.

Study Design, Setting, and Participants:

Official permission was obtained from the Human Research Ethics Committee/ College of Nursing /Al- Bayan University (reference no. 785 on 15/2/2022) for study approval to seek permission for data collection obtained from Al-Rasafa Baghdad Health Directorate (reference no. 35711 on 17/2/2022) for three hospitals: Al-Kindi, Al-Elwyia pediatric and Sheikh Zayed. A descriptive study design is used to achieve the study objectives, which was carried out from 25 February 2022 to 25 May 2022. A verbal consent was obtained from the nurses' participant which was approved by College of Nursing Ethics Committee at Al- Bayan University.

The total sample size were 150 nurses distributed as following: 80 nurses (53.3%) from Al- Kindi Teaching Hospital, 50 nurses (33.4%) from Al-Elwyia pediatric Teaching Hospital, and 20 nurses (13.3%) from Sheikh Zayed Hospital. The inclusion criteria include male and female nurses, working in hemodialysis, medical, emergency, and surgical units, have at least one year of experience, and from various educational level background. Whereas the exclusion criteria include the nurses who refused to participate in the study, have less than one year of experience and working in other hospital's wards.

Study Instrument:

The questionnaire was designed and constructed by Joukar and his colleges [10], which translated to Arabic language. A questionnaire format was used for data collection, which consisted of two parts. The first part is related to the nurses' demographic data 8 items, include age, gender, educational level, marital status, years of experience in hospital, workplace in hospital, attending training courses and information sources. The second part is related to nurses' knowledge of hepatitis C virus, which included 4 domains. 1st domain is the nature of the disease consist of 10 items, 2nd domain is transmission consist of 11 items, 3rd domain is prevention consist of 6 items, and 4th domain is treatment consist of 3 items.

Statistical Analysis:

A cross sectional descriptive study and inferential statistical tests are used to analyze and assess the results under the application of the statistical package of social science (SPSS), and the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) have been considered while collecting the data. The descriptive data analysis include mean ± standard deviation for quantitative variables and frequency with percentage distribution for categorized variables. While Analysis of Variance (ANOVA) was used as inferential statistical tests to determine the relationship between level of knowledge with demographic variables of the patients such as: age, educational level, marital status, occupation, etc. Finally, knowledge score level was utilized to assess overall nurses' knowledge. The chart arranged as the following: Poor (< 50%), Just passed (50%–59%), Fair (60%–69%), Good (70%–79%), and very good (>80%).

Results.

The nurses' demographic data results (table 1) displayed greater nurses' percentage were married (51.3%) female (71.3%), with the mean age 28.37± 7.6 years, graduated from medical institute diploma (44%), and 68% of them had 1-5 years of hospital experience. They also demonstrated 38% of nurses work at surgical units. As a study drawback, the results presented only 28% of the participant nurses were enrolled in hepatitis virus course, and 56% of their information sources were from internet and television.

Table 1. *Nurses' demographic data frequencies and percentages (n=150).*

Variables	Frequency	%
1-Gender		
Male	43	28.7
Female	107	71.3
Total	150	100
2-Age (years)		
20-29	113	75.3
30-39	21	14
40-49	11	7.3
More than 50	5	3.4
Total	150	100
Mean		28.37± SD 7.6
3- level of Educational:		
Nursing Secondary graduate	59	39.3
Medical institute diploma graduate	66	44
Bachelor's graduate of the College of Nursing	25	16.7
Total	150	100
4- marital status		
Marred	77	51.3
Single	65	43.3
Widower	3	2
Divorce	5	3.4
Total	150	100
5-Years of Experience in hospital		
1-5	102	68
6-10	33	22
11-15	9	6
16- and more	6	4
Total	150	100
6-Workplace in hospital		
Emergency units	19	12.7
Medical units	44	29.3
Surgical units	57	38
Hemodialysis units	30	20
Total	150	100
7- Attending training courses		
General course	108	72
Hepatitis virus course	42	28
Total	150	100
8-Information sources		
Internet and television	84	56
Book and educate	42	28
Family and friend	24	16
Total	150	100

The nurses' knowledge responses results (table 2) showed inconsistent pattern between the 4 domains questionnaire. As the nurses' answers were satisfying regarding HCV nature of the disease and treatment, as they answered correctly with 73% and 72 %; respectively. However, unsatisfying replies were collected regarding HCV transmission and prevention with 69% and 48.3%; respectively. the lowest correct percentages in transmission have detected in sexual transmission is a common way hepatitis C is spread with 28%, hepatitis C can be spread by mosquitoes with 38%, and hepatitis C can be spread through close personal contact such as kissing or talking with 44%. on the other hand, the lowest correct percentages in prevention have identified in HCV can be prevented by vaccine with 16% and HCV can't be prevented by hand washing with 27.3%.

The comparison of demographic characteristics and nurses' knowledge scores in each domain (Table 3) displayed a significant difference between the nurses' knowledge about treatment domain toward HCV concerning the information sources ($P<0.05$). Moreover, transmission and prevention domains toward HCV were statistically significant different based on the workplace in hospital ($P<0.05$). Also, high statistically significant difference was seen between nurses' knowledge about prevention domain and education level ($P<0.005$).

lastly, table 4 have determined the mean of the knowledge score level to be fair score with 66.66%± 12.9%.

Discussion.

In the present study most of the nurses included were (71.3%) female, (51.3%) married, mean age 28.37± 7.6 years, (44%) graduated from medical institute diploma, (68%) had 1-5 years of hospital experience, (28%) enrolled in hepatitis virus course, (38%) worked at surgical units, and (56%) acquired information sources were internet and television. These findings agreed with several studies that exhibited low HCV knowledge by the nurses and HCWs [11-13], and their knowledgeable raised with increase nurses' age related to high experience acquired [14-17]. On the other hand, a study conducted in Iran with 86.3% high education of post graduate degree nursing and 41.4% of more than 10 years

Table 2. *Nurses' knowledge responses to HCV.*

No	A-Nature of the disease	Correct F	%	Incorrect F	%
1.	Hepatitis C is a bacterial disease	115	76.7	35	23.3
2.	Hepatitis C is a Contagious disease	126	84	24	16
3.	Hepatitis C can lead to cirrhosis	135	90	15	10
4.	Hepatitis C is associated with an increased risk of liver cancer	103	68.7	47	31.3
5.	Once you have had hepatitis C, you cannot catch it again because you are immune	75	50	75	50
6.	Hepatitis C virus affects any age group	118	78.7	32	21.3
7.	Hepatitis C virus can infect organs other than the liver	75	50	75	50
8.	Jaundice is a common symptom of hepatitis C virus	133	88.7	17	11.3
9.	Hepatitis C virus can cause death	116	77.3	34	22.7
10.	Hepatitis C virus is considered a silent disease because the patient usually does not show any symptoms	99	66	51	34
	Total of mean	109.5	73	40.5	27
	B- Transmission	**F**	**%**	**F**	**%**
1.	Hepatitis C can be spread through close personal contact such as kissing or talking	66	44	84	56
2.	Hepatitis C can be spread through sharing injecting equipment, such as needles and operation tools	130	86.7	20	13.3
3.	Hepatitis C can be transferred from mother to fetus	119	79.3	31	20.7
4.	Hepatitis C can be spread by mosquitoes	57	38	93	62
5.	Hepatitis C is spread through blood-to-blood contact	124	82.7	26	17.3
6.	Having a medical and/or dental procedure increases a person’s chances of contracting hepatitis C	135	90	15	10
7.	Hepatitis C is spread through the air in an enclosed environment (e.g., crowded buses and elevators)	107	71.3	43	28.7
8.	Sexual transmission is a common way hepatitis C is spread	42	28	108	72
9.	Some people with hepatitis C were infected through unsterile tattooing.	141	94	9	6
10.	Some people with hepatitis C were infected through blood transfusions	136	90.7	14	9.3
11.	Hepatitis C Can be transmitted by sharing dishes	81	54	69	46
	Total of mean	103.5	69	46.5	31
	C- Prevention	**F**	**%**	**F**	**%**
1.	HCV can be prevented by vaccine	24	16	126	84
2.	HCV can be prevented by regular exercise	73	48.7	77	51.3
3.	HCV can be prevented by healthy diet	88	58.7	62	41.3
4.	HCV can’t be prevented by hand washing	41	27.3	109	72.7
5.	HCV can be prevented by condom	86	57.3	64	42.7
6.	Do not share tools with others, especially shaving tools, toothbrushes, and nail scissors	123	82	27	18
	Total of mean	72.5	48.3	77.5	51.7
	D- Treatment	**F**	**%**	**F**	**%**
1.	There is a pharmaceutical treatment available for hepatitis C.	88	58.7	62	41.3
2.	Special diet is recommended for patients with Hepatitis C	102	68	48	32
3.	Patients with hepatitis C are advised to avoid alcohol, drugs, medications, and toxins, which may affect liver function.	134	89.3	16	10.7
	Total of mean	108	72	42	28

Table 3. *Comparison of demographic characteristics and nurses' knowledge scores in each domain.*

Variables	Correlation coefficient	Nature of the disease	Transmission	Prevention	Treatment
Age	Pearson C.	-.034	-.036	-.029	-.117
	Sig. (2-tailed)	.683	.663	.722	.154
Gender	Pearson C.	.076	-.119	.109	.132
	Sig. (2-tailed)	.353	.148	.183	.107
Level of Education	Pearson C.	-.117	.064	.236** HS	.041
	Sig. (2-tailed)	.152	.437	.004	.615
Years of Experience in Hospital	Pearson C.	-.062	-.005	-.067	-.145
	Sig. (2-tailed)	.452	.950	.415	.076
Workplace In Hospital	Pearson C.	.136	-.201* S	-.201* S	-.050
	Sig. (2-tailed)	.097	.013	.014	.540
Training Courses	Pearson C.	.121	-.092	-.059	.082
	Sig. (2-tailed)	.142	.261	.471	.319
Information sources	Pearson C.	-.114	.022	-.029-	-.154* S
	Sig. (2-tailed)	.164	.790	.720	.050
* Correlation is significant at the 0.05 level (2-tailed) S= Significant, ** Correlation is significant at the 0.01 level (2-tailed) HS= Highly significant					

Table 4. *The knowledge score level and their frequencies among the nurses.*

Knowledge score level	Frequency	%
Poor (less than 50%)	8	5.3
Just passed (50%–59%)	19	12.7
Fair (60%–69%)	56	37.3
Good (70%–79%)	51	34
Very good (80%–89%)	16	10.7
Mean score	**1.66 ± 12.**9	

hospital experience has also showed unsatisfactory knowledge score in HCV of about 52.9% [10]. Hence improved knowledge and practice have been remarked by establishing HCV training and educational program which have been set to nurses at Mansoura University Hospital/Egypt [18]. Furthermore, a study in Italy revealed superiority of the nurses upon other HCWs in using appropriately control measures when educational courses and scientific journals became their main information sources [19]. Despite high HCV risk in hemodialysis unit with discrimination and stigmatization to be close contact to, however two studies conducted at hemodialysis units in Italy and Saudi Arabia exposed that the nurses had high HCV knowledge and positive attitude toward the patients, the reason was due to long years in practice, specific education programs offered at dialysis units and adequate hemodialysis equipment [20,21]. Despite female gender showed higher positive knowledge, but other study done in Turkey revealed male dominance knowledge score, thus gender consider independent to the level of nurses' knowledge [22,23].

Although most of the nurses 'responses in the current study showed satisfactory knowledge in the nature of the disease and treatment strategy with 73% and 72%; respectively. But small percentage of respondents knew about HCV transmission and prevention, due to low correct percentage with 69% and 48.3%; respectively. Most of the answers reported incorrectly regarding HCV spread through close personal contact such as kissing or talking by 56%, spread by mosquitoes answered by 62%, and sexual transmission as a common way of HCV spread by 72%. These results agreed with other prior studies which reported more or less similar incorrect answers regarding HCV transmission by kissing or talking, mosquito or consider sexual spread is a common way for HCV transmission [10,12,17].The low nurses' awareness about HCV transmission had been detected in several studies. As scoping review on the HCWs knowledge concluded minimum HCWs awareness about some HCV transmission routes (e.g., unsafe tattooing practices or piercings) compared with the main routes [9]. Moreover, a study conducted to HCWs in Ethiopia revealed poor awareness of 14.8% and 22.6% about non breastfeeding and uncontaminated water/food transmission, respectively [24]. Additionally, contaminated water transmission was chosen by 21.7% of the nurses as one of the blood borne diseases transmission routes [25].

In the current study, the nurses exhibited lack of knowledge with high percentage of incorrect answers of HCV prevention by vaccine (84%), by regular exercise (51.3%), by hand washing (72.7%) and by condom (42.7%). A comparable result have been seen in a study conducted in Iran with high percentage of incorrect answers of HCV prevention by vaccine (64.1%), by regular exercise (91.1%), by hand washing (41.5%) and by condom (19.6%) [10]. Moreover, 82.9% of the nurses have responded that there is vaccine against HCV in a study conducted in Pakistan [26]. On the other hand, nurses have exhibited unsatisfactory prevention steps in hemodialysis unit, in which only 50.3% of nurses wear gloves when touching care equipment, only 31.3% of the nurses prepare medications in a room or area separated from the patient treatment area, and only 30.5% of the nurse's wear cap when splattering of blood onto head is possible [19].

The comparison of demographic characteristics and nurses' knowledge scores in each domain exhibited significant

difference between the nurses' knowledge about treatment with the information sources (P<0.05), between nurses' knowledge about transmission and prevention with the workplace in hospital (P<0.05), and between nurses' knowledge about prevention with the education level (P<0.005). This finding agreed with another study that showed a significant difference between transmission and surgical unit, due to high risk of blood contact [10].

Even with the mean knowledge score was fair grade of 66.66%± 12.9%, however we ambitious to upgrade our HCWs to be more knowledgeable and professional in their field. From this study, we able to highlight our nurse staff weakness regarding HCV awareness, thus more focusing will steer toward information sources, hospital workplace and educational level. This can be done via continuous and updating HCV training course to all nurses with different educational background. For future study design, our suggestion is to assess the nurses' knowledge about HCV who are more engage with high-risk patients, like surgical units, blood bank, hemodialysis center, thalassemia center, hemophilia center, and cancer wards.

Limitation.

The questionnaire forms were distributed on the available and who agree to participate nurses in the hospital units on the days of data collection, thus there is no guarantee that the nurse participants are the actual number of nurses in the three hospital units. In addition, nurses who refuse to participate might be due to inadequate HCV knowledge. Moreover, the time constrain make difficult to collect more responses. Lastly, inability to control study's' variable, as simple as participants' mood may affect their responses to the interview questions.

Conclusion.

In conclusion, the study findings revealed fair nurse' knowledge about HCV (66.66%± 12.9%), with low awareness in its transmission (69%) and prevention (48.3%). This was significant difference related to information sources (P<0.05), hospital workplace (P<0.05) and educational level (P<0.005). Thus, continuing education programs are essential to increase awareness of HCV among the nurses. **Authors' contributions.**

Zahraa M Alzubaidi analyzed and interpreted patient data and drafted the manuscript. Wafaa M. A. Al-attar participated, coordinated, and analyzed the clinical data. The authors read and approved the final manuscript.

Conflict of interests.

The authors declare that they have no conflict of interests.

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Data sharing policy.

All data generated or analyzed during this study are included in this published article.

Ethical approval.

Research ethics approval was granted by the Human Research Ethics Committee/ College of Nursing /Al- Bayan University (reference no. 785 on 15/2/2022) for study approval to seek permission for data collection obtained from Al-Rasafa Baghdad Health Directorate (reference no. 35711 on 17/2/2022) for the three hospitals.

REFERENCES

1. Lingala S, Ghany MG. Natural history of hepatitis C. Gastroenterol Clin North Am. 2015;44:717-734.
2. Alshok M. A study on heptocellular carcinoma in babylon, Iraq: 2856. Am J Gastroenterol. 2018;113.
3. Thejeal FR, Bahlol AR, Noori RJ. The need for liver transplant in a sample of Iraqi children with chronic liver disease. Rev Latinoam de Hipertens. 2021;16.
4. Merza MA. Seroprevalence and risk factors of hepatitis B and C viruses among diabetes mellitus patients in Duhok province, Iraqi Kurdistan. J Family Med Prim Care. 2020;9:642-646.
5. Ali S, Abd KH, Hussain A. Hepatitis B-and C-viral markers screening in Iraqi patients with proteinuria. The Iraqi Postgraduate Medical Journal. 2008.
6. Mohammed SZ, Naqid I, Hussein N, et al. The prevalence of hepatitis B and C virus in patients with end-stage kidney disease on regular hemodialysis in Duhok, Iraq: a brief report. Avicenna J Clin Microbiol Infect. 2020;7:31-33.
7. Global health sector strategy on viral hepatitis 2016–2021: World Health Organization; 2016.
8. Poll R. The role of the community nurse in hepatitis C diagnosis and treatment. Br J Community Nurs. 2009;14:292.
9. Ha S, Timmerman K. Awareness, and knowledge of hepatitis C among health care providers and the public: A scoping review. Can Commun Dis Rep. 2018;44:157-165.
10. Joukar F, Mansour-Ghanaei F, Naghipour MR, et al. Nurses' knowledge toward hepatitis B and hepatitis C in Guilan, Iran. Open Nurs J. 2017;11:34-42.
11. Frazer K, Glacken M, Coughlan B, et al. Hepatitis C virus in primary care: survey of nurses' attitudes to caring. J Adv Nurs. 2011;67:598-608.
12. Mtengezo J, Lee H, Ngoma J, et al. Knowledge and attitudes toward HIV, hepatitis B virus, and hepatitis C virus infection among health-care workers in Malawi. Asia Pac J Oncol Nurs. 2016;3:344-351.
13. Hussein H. Knowledge of Iraqi midwives and nurses about hepatitis C virus at maternity hospitals in Baghdad city. Indian J Public Health Res Dev. 2019;10.
14. Richmond JA, Dunning TL, Desmond PV. Health professionals' attitudes toward caring for people with hepatitis C. J Viral Hepat. 2007;14:624-632.
15. Joukar F, Mansour-Ghanaei F, Soati F, et al. Knowledge levels and attitudes of health care professionals toward patients with hepatitis C infection. World J Gastroenterol. 2012;18:2238-2244.

16. Islam N, Flores YN, Ramirez P, et al. Hepatitis and liver disease knowledge and preventive practices among health workers in Mexico: a cross-sectional study. Int J Public Health. 2014;59:381-394.
17. Korkmaz P, Uyar C, Ozmen A, et al. Knowledge and attitude of health care workers toward patients with hepatitis C infection. Southeast Asian J Trop Med Public Health. 2016;47:935-944.
18. El sayed S, Wafa AM. The effects of an educational program on nurses' knowledge and practice related to hepatitis C virus: A pretest and posttest quasi-experimental design. Aust J Basic Appl Sci. 2011;5:564-570.
19. Parmeggiani C, Abbate R, Marinelli P, et al. Healthcare workers and health care-associated infections: knowledge, attitudes, and behavior in emergency departments in Italy. BMC Infect Dis. 2010;10:35.
20. Bianco A, Bova F, Nobile C, et al. Healthcare workers, and prevention of hepatitis C virus transmission: exploring knowledge, attitudes, and evidence-based practices in hemodialysis units in Italy. BMC Infect Dis. 2013;13:76.
21. Al-Ghamdi SM. Nurses' knowledge and practice in hemodialysis units: comparison between nurses in units with high and low prevalence of hepatitis C virus infection. Saudi j kidney dis transplant. 2004;15:34-40.
22. Cekin AH, Cekin Y, Ozdemir A. The level of knowledge of attitude toward and emphasis given to HBV and HCV infections among healthcare professionals: data from a tertiary hospital in Turkey. Int J Occup Environ Health. 2013;26:122-131.
23. van de Mortel TF. Health care workers' knowledge of hepatitis C and attitudes towards patients with hepatitis C: a pilot study. Aust J Adv Nurs. 2002;20:13-19.
24. Hebo HJ, Gemeda DH, Abdusemed KA. Hepatitis B and C viral infection: prevalence, knowledge, attitude, practice, and occupational exposure among healthcare workers of Jimma University Medical Center, southwest Ethiopia. Sci World J. 2019;2019:9482607.
25. Abdullah H, Yasmin A, Amal K, et al. Knowledge and attitude of the physicians and nurses regarding blood borne infections in primary health care, Kuwait. Greener J Med Sci. 2012;2:107-114.
26. Hussain M, Afzal M, Bibi F, et al. Knowledge and attitude level of nurses about hepatitis C patient. Saudi J Med Pharm Sci. 2017;3:681-692.