

GEORGIAN MEDICAL NEWS

ISSN 1512-0112

NO 4 (337) Апрель 2023

ТБИЛИСИ - NEW YORK



ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

Monthly Georgia-US joint scientific journal published both in electronic and paper formats of the Agency of Medical Information of the Georgian Association of Business Press.
Published since 1994. Distributed in NIS, EU and USA.

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 ВИНТИ 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.

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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. Корректур авторам не высылаются, 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 computer-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 საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ 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 შედეგის 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 ფხიხლებში 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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COMPLIANCE AND CHALLENGES OF TRANSMISSION BASED PRECAUTION PRACTICES AMONG NURSES IN JORDANIAN HOSPITALS DURING THE NOVEL COVID-19: A DESCRIPTIVE STUDY

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Abstract.

Background: Standard precautions practices are crucial management skills among nurses against the highly infectious novel COVID-19.

Aims: The study aimed to investigate the level of nurses' compliance with standard precautions, and identify the main challenges experienced by nurses during their work with infected COVID-19 patients.

Methods and materials: A cross-sectional survey design was used. The study was done at the beginning of the pandemic in public and private hospitals in Jordan. About 386 front-line nurses filled out the online questionnaire.

Results: Most of the participants revealed dealing with COVID-19 patients (73.6%). Generally, nurses demonstrated a good level of compliance with standard practices (71%). The staff reported that they mostly adhere to performing hand hygiene after all procedures (65.8%). On the other hand, they were the least adherence to maintaining a physical distance of patients and staff of at least 6 feet apart (28.5%).

Conclusion: Strict observation of the compliance of nurses with the standard precautions practices is crucial to be maintained at the highest level to eliminate the spreading of COVID-19 among other community members. More efforts should be come to light including continuous training and education sessions to enhance nurses' level of knowledge and practice concerning controlling the outbreak of the novel pandemic.

Key words. Transmission-based precautions, COVID-19, Practices, Compliance, Nurses, preventive measures, Jordan.

What's known?

- Standard precautions practices are the most crucial and basic skills among all health care providers.
- The pandemic of novel COVID-19 is a serious challenge for healthcare authorities from the aspects of spread, treatment, and prevention.
- Little evidence about the compliance of nurses with standard precautions and practices and the main challenges that may face during the novel COVID-19.

What's new?

- Generally, nurses demonstrated a good level of compliance with standard precautions practices (71%).
- Most nurses revealed performing hand hygiene after all procedures as standard precautions practice (65.8%).
- The main challenges faced by nurses were fear of infecting family members, work overload, fear of contracting the virus, and shortage of staff.

Introduction.

The novel COVID-19 is a highly infectious respiratory disease that is described as severe acute respiratory syndrome coronavirus (SARS-CoV-2). This novel pandemic is performing a global threat leading to high mortality and morbidity rate among the population [1]. The outbreak of the disease limits the quality of health care and leads to crises in health care services due to the scarcity of resources, workload, and lack of infection control policies [2]. All of these mentioned factors were contributing to the non-compliance of Health Care Workers (HCWs) to Standard Precautions (SPs) that were known as universally accepted policies and guidelines for infection control practices [3]. These practices help to protect HCWs from getting infected while introducing care to infectious patients and reducing the spread of infection among patients simultaneously [4]. In Jordan, a rapid accelerating curve in confirmed COVID-19 cases which alarming the situation among HCWs and threatening healthcare institutions [5].

Nowadays, the pandemic of novel COVID-19 became a serious challenge for healthcare authorities, communities, and other healthcare agencies from the aspects of spread, treatment, and prevention [6]. The Centers for Disease Control and Prevention (CDC) recognized that the common symptoms of COVID-19 range from mild symptoms such as fever, fatigue, cough, dyspnea, sore throat, muscle pain, loss of smell and taste, and abdominal discomfort [1] to severe symptoms of pneumonia, acute respiratory distress syndrome, renal failure, shock that leading to end organ damage [7]. Recognizing risk factors and identifying the severity of each case is vital to improve the quality of patient care and help the care providers to introduce the best care and improve patient safety.

Based on the available knowledge, COVID-19 could be spread through droplets, airborne, and contact as modes of transmission [8]. However, according to current literature and evidence, the COVID-19 virus is transmitted between people through respiratory droplets and contact routes [9]. This requires taking the recommended practices of airborne precautions for any situation involving the care of COVID-19 patients. Also, it should follow the recommendation of the circumstances and settings in which aerosol-generating procedures and support treatment are performed [10]. Contact precautions as well are important recommendations to be followed through the emphasis on the importance of frequent hand hygiene, environmental cleaning, and disinfection, as well as the importance of maintaining physical distances and avoidance of close, unprotected contact with people with respiratory symptoms [11].

Nurses are on the frontlines in managing and treating the patients who were suspected or diagnosed as positive carriers of COVID-19 since they were the heaviest takers of direct contact with those infected persons [12]. This put all nurses at high risk of being infected with this highly contagious virus, which is alarming to the situation of health care authorities [6]. Infected nurses and other medical staff lead them to arrive at critical stages of both physical and psychological problems [13]. Psychological threats including stress, anxiety, and worriedness replicate the risks of mediating morbidity of COVID-19 among nurses [14].

This alarming situation calls for the urgent need to develop a strategy to consider all these factors especially the workload for long hours their duty, rest, exercise, protective clothing, and psychological counseling among medical staff to avoid infection [15]. Without taking the appropriate effective measures, the situation will be out of control which will eventually lead to massive pandemics worldwide [16].

Healthcare-Associated Infections which is referred to an infection that is acquired during the process of introducing care during hospitalization [17]. Healthcare professionals are constantly exposed to many types of microorganisms that can cause serious or lethal infections [18]. Nurses, in particular, are more exposed to infection during their routine nursing care activities with their patients. Although infection control measures that can be taken such as hand hygiene, and commitment to the protective handling of equipment is a low cost, simple, and protective [19], it requires restrictive staff accountability and behavioral adaptation to the current situation. This is could be achieved by continuous training to enhance the adherence to SPs, which were designated to minimize the spread of microorganisms [20].

Unfortunately, poor knowledge and compliance with SPs were revealed in many studies that could explain the high number of medical staff who were infected by COVID-19 among hospitalized patients [21,2]. In Jordan, little evidence is available about the level of adherence of nurses to SPs practices and the main challenges that faces they during their care of COVID-19 patients. Hence, the purpose of the current study is to investigate the level of transmission-based practice precautions, and the main challenges experienced by nurses with the management of COVID-19 patients at Jordanian hospitals during the outbreak of the pandemic.

Materials and methods.

Research design:

A descriptive cross-sectional survey design was used.

Settings:

The study was conducted in different sectors including governmental, private, and university-affiliated settings in which they represent the healthcare sector in Jordan.

Sample and sampling technique:

Data were collected conveniently from 386 nurses recruited from different Jordanian hospitals. The target population for the current study included all nurses who were assigned to bedside care. Whereas, the accessible population included the

available nurses who accept to participate in the current study. The inclusion criteria were (1) nurses who provide direct contact with patients who were infected with COVID-19; (2) educational level of diploma, bachelor and a higher degree in nursing; (3) agreed to participate; and (4) have an experience of at least one year in nursing. Exclusion criteria were all nurses in the managerial position including head nurses of the assigned wards or nurses who have an administrative role in their clinical settings. Data were collected through an online form that was filled out and submitted through a Google survey link that was started from the period 8 February 2021 to the period 21 February 2021. The data were collected from different departments and units in the hospitals. Data were collected by sending the questionnaire link to different WhatsApp groups from a different departments. Each group contains around 30 participants. Also, the link was distributed among different nursing clubs and forums via Facebook groups.

Ethical consideration:

The study protocols were reviewed and approved by the ethics committees at Al al-Bayt University (# 4/2020/2021). There were no known risks from participating in the study. An information sheet was provided to each participant describing the purpose of the study, confirming the privacy, anonymity, and confidentiality of participants, and the voluntary nature of their participation. Informed consent was implied by completing and returning the survey. Permission was obtained from the copyright holder to use the questionnaire developed by Afemikhe et al. [1].

Data collection:

After obtaining the IRB approval. The data was collected by preparing an electronic questionnaire through a specialized internet website-Google forum (via docs.google.com/form). This e-questionnaire enabled the participants to review and answer the questionnaires more conveniently. The prepared electronic questionnaire was embedded in an electronic attachment link and sent to participants through a social-media application (WhatsApp and Facebook). A timeframe was set for participation in filling out the questionnaire for two weeks. After the expiration of the period, the form was deactivated.

Instrument:

Nursing staff compliance with SPs practices was measured by a self-built tool based on principles issued by the World Health Organization (WHO), and CDC measures precautions during the COVID-19 pandemic. The questionnaire was developed by Afemikhe et al. [1]. The questionnaire was administered in English because Jordanian nurses can understand and answer questions in the original language of the tool. The instrument is composed of three parts. Part-A includes demographic characteristics items such as gender, age, qualification, years of experience, and marital status. Other demographics were added in the current study such as the name of the hospital, department, and health sector if the nurse previously deal with COVID-19 patients, if the nurse was diagnosed previously with COVID-19, if the nurse receive the vaccine of COVID-19, or if the nurse willing to receive COVID-19 vaccine. Part B includes items on transmission-based precaution practices which consist

of 12 items with the options of a 4-point Likert scale “Never, Sometimes, Often, and Always”. Higher scores indicate higher compliance of nurses with SPs practices. Furthermore, the classification of practices was leveled according to the total scores as follows 0-50 was considered as poor level, 50-70 classified as fair level, and 70-100 classified as good practice. Part C includes items on perceived challenges experienced by nurses that could affect their adherence to transmission-based precaution practices. It consists of 15 closed-ended questions with options for “Yes” or “No” answers [1]. The questionnaire was tested for validity and reliability in previous studies and was found valid and reliable. The reliability values obtained from the split-half reliability test for parts (B & C) were (0.79) and (0.85) respectively [1].

Results.

Participants’ Demographics:

A total of 386 participants from different sectors in Jordanian hospitals completed the questionnaire. Table 1 provides a detailed description of the participants’ demographics.

Table 1. Demographics and professional characteristics of nurses (N=386).

Characteristic	Mean (SD)	Frequency (%)
Age	30.7 (6.2)	
Nursing experience in years	7.9 (5.9)	
Gender		
Male		128 (33.2)
Female		258 (66.8)
Education level		
Diploma & Bachelor		323 (83.7)
Postgraduate studies		63 (16.3)
Marital status		
Single		140 (36.3)
Married		246 (63.7)
If nurses have a chronic disease		
Yes		57 (14.8)
No		329 (85.4)
Type of settings		
Governmental		197 (51.0)
Private		86 (22.3)
Military		46 (11.9)
University-affiliated		57 (14.8)
If dealt previously with COVID-19 patients		
Yes		284 (73.6)
No		102 (26.4)
Receive vaccine for COVID-19		
Yes		167 (43.3)
No		219 (56.7)
Receive training courses for COVID-19		
Yes		207 (53.6)
No		179 (46.4)

Note: SD=Standard Deviation, %=percentage.

Nursing compliance with Standard precautions practices with COVID-19:

Generally, the findings of the current study showed a good level of SPs practices by nurses. Since, they revealed performing hand hygiene after all procedures (n=254, 65.8%). Whereas they demonstrated the least compliance with the physical distancing of patients and staff at least 6 feet apart (n=110, 28.5%) (Table 2).

Based upon the categorization of transmission-based practices by nurses they mostly maintained a good level of practice (n=274, 71.0%) (Table 3).

Challenges experienced by nurses while dealing with COVID-19 patients:

The majority of nurses mainly had a fear of getting the infection to family members (87.6%). Followed by the perception of their work overload (86.8%) during the pandemic, fear of contracting the virus (87%), and shortage of staff (86%). About two-thirds of nurses reported that lack of motivation and lack of training programs were other factors that affect their compliance with SPs practices (Table 4).

Discussion.

The current study investigates the level of nurses’ compliance with SPs and identifies the main challenges that are faced during their work with infected COVID-19 patients. The findings of this study reported a good level of SPs skills which were consistent with the international guidelines revealing the high responsibility and accountability of nurses toward dealing with COVID-19 patients.

The frequency of good practices of SPs is consistent with other studies among healthcare professionals in Ghana, and Denmark [22,23]. Adherence of nurses to infection control policies could be related to the conduction of online conferences about COVID-19, and adherence to the guidelines of healthcare institution's policies, since they were the front liners in fighting against the pandemic during out breaking the virus. On the other hand, other studies in Saudi Arabia and Jordan indicate poor compliance of HCWs toward the SPs [1,24,25]. This is could be related to the lack of face-to-face training programs to enhance their knowledge and understanding of infection control practices during the pandemic.

Jordanian nurses who participated in the current study have a higher proportion in the item of performing hand hygiene after all procedures. This means that around one-third of the participants do not perform hand hygiene after each contact or procedure with the infected COVID-19 patients, surprising results indicate the alarming situation of maintaining the crucial and efficient step in eradicating the transmission of contracting the virus. This was contradict the results that were found among Nigerian nurses when they reported that they generally maintained hand hygiene practices with a percentage of 89.1% [1]. The non-compliance of nurses with hand hygiene practice needs a call for behavioral changes along enhances their accountability about the importance of frequent hand washing since it is the most efficient and simplest way to prevent the

Table 2. Compliance of Transmission-Based Practice by Nurses.

Transmission-based precaution practices	Never (0) F (%)	Sometimes (1) F (%)	Often (2) F (%)	Always (3) F (%)
Hand hygiene is performed after all procedures	13 (3.4)	34 (8.8)	85 (22)	254 (65.8)
Using of Personal Protective Equipment for SARS-CoV-2 patients requiring healthcare facility admission with aerosol-generating procedure	29 (7.5)	47 (12.2)	106 (27.5)	204 (52.8)
Using PPE for every patient with first contact	32 (8.3)	69 (17.9)	114 (29.5)	171 (44.3)
Covering mouth and nose with a tissue when coughing or sneezing	16 (4.1)	23 (6.0)	99 (25.6)	248 (64.5)
Provision of a waste receptacle to dispose of tissue after use	13 (3.4)	41 (10.6)	137 (35.5)	195 (50.5)
Offering masks to a symptomatic patient upon arrival to the ward	21 (5.4)	55 (14.2)	119 (30.8)	191 (49.5)
Offer of the mask to asymptomatic patients on arrival to the ward	26 (6.7)	69 (17.9)	129 (33.4)	162 (42.0)
Providing resources for performing hand hygiene in or near the waiting area	17 (4.4)	62 (16.1)	142 (36.8)	165 (42.7)
Educating patients about the disease	17 (4.4)	62 (16.1)	142 (36.8)	165 (42.7)
Performing clinical triage for patients on admission	31 (8.0)	67 (17.4)	123 (31.9)	165 (42.7)
The physical distancing of patients and staff at least 6ft apart	41 (10.6)	93 (24.1)	142 (36.8)	110 (28.5)
Controlling of number of visitors around a patient	38 (9.8)	90 (23.3)	120 (31.1)	138 (35.8)

Note: F= Frequency, %=Percentage

Table 3. Categorization of Transmission-Based Practices by Nurses.

Categorization	Score range	F (%)
Poor	0-50	39 (10.1)
Fair	50-70	73 (18.9)
Good	70-100	274 (71.0)

Note: F= Frequency

Table 4. Challenges Experienced by Nurses while caring COVID-19 Patients.

Challenges	Yes F(%)	No F(%)
Fear of infecting a family member	338 (87.6)	48 (12.4)
Fear of contracting the virus	336 (87.0)	50 (13.0)
Work Overload	335 (86.8)	51 (13.2)
Shortage of staff	332 (86.0)	54 (14.0)
Lack of motivation (hazard allowance)	299 (77.5)	87 (22.5)
Lack of training program	290 (75.1)	96 (24.9)
Seeing elderly suffering	288 (74.6)	98 (25.4)
Overcrowding in the ward	285 (73.8)	101 (26.2)
Availability of Personal Protective Equipment	276 (71.5)	110 (28.5)
Ineffective communication among administrative	263 (68.1)	123 (31.9)
Shortage of instruments and supplies	261 (67.6)	125 (32.4)
Less commitment to policies and procedures	251 (65.0)	135 (35.0)
Inadequate testing material and delay in results	234 (60.6)	152 (39.4)
Stigmatization	231 (59.8)	155 (40.2)
Moral injury	225 (58.3)	161 (41.7)

Note: F= Frequency, %=Percentage

spreading of COVID-19 among patients and staff. This could be related to the staff shortage, workload, lack of knowledge regarding the guidelines they followed in their healthcare institutions, and the cumbersome nature of sanitizing hands a lot of times [26].

Generally, nurses in the current study experienced many challenges that restrict them to maintain a high level of compliance with the SPs practices including fear of infecting family members, work overload, fear of contracting the virus, and shortage of staff, respectively. This result was not surprising, since HCWs were still in fear about the nature of the virus and its management of it, so they in worry to transmit the novel virus to themselves or other family members. This was consistent with a study conducted by Clark et al. [27], who pointed out that most nurses worried to be vehicles for transmitting the virus among their family members who already had co-morbidity conditions, immunocompromised, or fragile to bear this virus. Also, the results of nursing staff shortage and work-pressure load are in agreement with other studies that reported lack of resources, workload, and lack of adherence to infection control policies as the main contributing factors of noncompliance of nurses with the SPs practices.

Conclusion.

Strict observation of the compliance of nurses with the SPs practices is crucial to be maintained at the highest level to eliminate the spreading of COVID-19 among other community members. More concentrated efforts should come under light including continuous training and education sessions, seminars, and conferences to enhance nurses' level of knowledge and practice about controlling the outbreak of the novel pandemic. Furthermore, it is recommended to conduct studies covering all HCWs in different geographical areas with frequent follow-up to identify areas of non-compliance with SPs practices. Also, Jordanian staff must perform their patients' care while being protected from the transmission of COVID-19, by completely adhering to SPs practices guidelines, and policies.

Limitation.

This study has a limitation in collecting the data among nurses conveniently, which could affect the generalizability of data. However, great efforts were done to recruit many participants from different sectors in Jordanian hospitals including governmental, private, and University-affiliated sectors. Secondly, the data were collected during the period of lockdown which restrict the collection of data using the self-reporting method without observing nurses' compliance with SPs.

Acknowledgement.

The authors of the study would like to thank all the participants for their support.

Funding Statement.

There is no kind of funding for this study.

Conflict of interest. Nothing to declare. No funding from any source.

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