Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 4s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Educational Level and Work Experience as Determinants of Infection Prevention Competence Among Operating Room Nurses

Marwa Abdallah Ali[1], Amean Ageel Yasir[2]

[1]PhD Student, Community Health Nursing, College of Nursing, University of Babylon

[2]Professor of Community Health Nursing, College of Nursing, University of Babylon

Email ID: marwa.mazloum.nurh121@student.uobabylon.edu.iq

Cite this paper as: Marwa Abdallah Ali, Amean Ageel Yasir, (2025) Educational Level and Work Experience as Determinants of Infection Prevention Competence Among Operating Room Nurses. *Journal of Neonatal Surgery*, 14 (4s), 992-1000.

ABSTRACT

The operating room is regarded as a high-risk area within the hospital due to its elevated infection and fatality rates. Thus, healthcare professionals' adherence to established precautions and their understanding of these procedures is crucial for safeguarding both patients and healthcare personnel.

Study Objectives: To assess nurses' knowledge of infection control and to investigate the correlation between nurses' knowledge levels and infection control practices.

Method: The researchers conducted interviews with 93 nurses from two hospitals in Kirkuk City to perform their cross-sectional analysis. Data was collected through in-person interviews utilizing a questionnaire divided into three parts: demographic information, practical procedural data, and comprehension of infection prevention. The study employed descriptive statistics and reliability evaluations using Cronbach's alpha and SPSS software to identify correlations and relationships.

Results: The majority of nurses (36.6%) were aged between 20 and 26, with 67.7% having 1 to 7 years of experience. Nurses demonstrated a significant positive correlation between their knowledge acquisition and practical application ($r=0.684$, $P<0.01$). Nursing knowledge was significantly influenced by educational level and participation in infection control training ($P<0.01$).

Conclusions: The research findings indicate that operating room nurses exhibit a moderate level of competence in infection prevention. There is a clear relationship between the knowledge that nurses possess and their actual performance in infection control.

Recommendations: The healthcare organization should implement ongoing training sessions for nurses and provide extended educational programs on infection control.

Keywords: *Infection prevention control, Operating room, Knowledge, Nurses*

1. INTRODUCTION

The operating room is regarded as a high-risk area inside the hospital due to its increased infection and fatality rates. Thus, the extent of healthcare professionals' adherence to established precautions and their understanding of these procedures is crucial for safeguarding both patients and healthcare personnel. (1)

Infection control, defined as the reduction of the introduction and dissemination of infectious pathogens in healthcare settings, tries to prevent their acquisition and transmission. Infections acquired in healthcare settings lead to societal and economic detriments owing to extended hospitalizations, elevated medical expenses, and heightened medical litigation. Infections substantially impact mortality and pose a considerable threat to patient safety. Consequently, infection control has been emphasized as essential for preventing harm from infections and safeguarding patient safety.(2)

Surgical site infection (SSI) presents a considerable threat to patient safety, resulting in morbidity and mortality. Intraoperative infection prevention measures are essential for mitigating surgical site infections (SSI) and diminishing the possibility of contamination from ambient bacteria or skin flora. (3)

Hospital-acquired infections are linked to hospital admissions and provide a significant threat to patient health. Approximately 8.7% of hospitalized patients globally are afflicted by these illnesses. This occurrence results in elevated healthcare expenses and diminished access to hospital services due to extended treatment durations; furthermore, it contributes to emotional and psychological issues for both the patient and their family. (4)

Research undertaken nationally and globally has revealed a substantial deficiency in the education of healthcare professionals about the prevention and control of healthcare-associated illnesses (HCAP). This limitation is evident in caregiving practices, as the healthcare team frequently lacks adequate preparation to execute vital preventative and control actions against these illnesses. Furthermore, it is imperative to reevaluate and restructure the teaching in this domain to guarantee the cultivation of the professional abilities necessary from the outset of a nurse's training. (5)

Health recommendations for infection control and prevention encompass the use of medical gloves, adherence to proper hand hygiene, implementation of medical precautions when managing blood and other bodily fluids, sterilization and disinfection of instruments, linens, areas, and surfaces, as well as meticulous precautions regarding blood and bodily fluids, along with the sterilization of instruments and equipment and disinfection of surfaces. Individuals are more susceptible to illness, and pathogens develop resistance to treatments when infection prevention and control protocols are disregarded. This may lead to prolonged hospital stays, increased expenses, and an escalation of health issues that can result in impairment and, in some cases, mortality. (6)

Environmental cleanliness is a crucial factor in reducing infections in operating rooms. The proliferation of detrimental infections such as Clostridium difficile and antibiotic-resistant pathogens like methicillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant enterococci (VRE) is significantly facilitated by contaminated surfaces in surgical environments. To reduce exposure, surfaces and equipment that patients and healthcare professionals interact with must be adequately sterilized. (7)

2. METHODOLOGY

1. A cross-sectional study was selected as the research methodology, conducted in the operating rooms of medical institutions in Kirkuk city, namely at Kirkuk Teaching Hospital and Azadi Teaching Hospital.
2. The study examines a non-probabilistic cohort of 93 nurses employed in the operating room.
3. Study instruments: The questionnaire has been created using appropriate sources of information. The questionnaire had three distinct components. The initial portion comprised seven elements of socio-demographic data. The second half encompasses nurses' comprehension of the 13 elements of infection prevention and control measures, while the third segment comprises 15 components of practical procedures for nurses pertaining to infection control and preventive measures.
4. Samples were obtained from 7 June 2024 to 1 October 2024 by face-to-face interviews with nurses utilizing questionnaires.
5. The tool's dependability was utilized to determine the questionnaire's reliability, which was assessed by comparison of the questionnaire. The dependability coefficient (Cronbach's Alpha) is 0.720.
6. The data collected is evaluated and analyzed using Microsoft Excel 2010 and version 25 of the Statistical Package for the Social Sciences (SPSS).

3. RESULT

Table (4.1) Descriptive statistics relating to the demographics of nurses:

Demographic data		**Frequency (N=93)**	**Percentage**
Age / years	20-26	34	36.6
	27-33	29	31.2
	34-40	20	21.5
	41-47	10	10.8

Residence	Urban	50	53.8
	Rural	43	46.2
Level of Education	Secondary school of nursing	33	35.5
	Diploma	42	45.2
	Bachelor	18	19.4
Marital Status	Single	24	25.8
	Married	60	64.5
	Divorced	4	4.3
	Widowed	5	5.4
Period of Working in the operating room/Years	1-7	63	67.7
	8-15	28	30.1
	16-23	2	2.2
Training course in infection control	Yes	48	50.9
	No	45	49.1
No. of Training Courses	0	45	48.4
	1-4	32	34.4
	5-8	10	10.7
	9-12	6	6.5

The study sample comprised 93 nurses, with their demographic characteristics detailed in Table 4.1. This table indicates that the majority of nursing subgroups considered in the present study

Table (4.2) Nursing knowledge assessment of infection prevention and control and its application to M score calculation:

No.	Items	MS	SD	Assess.
1	sterilization prevents infection acquired in the hospital	0.66	0.42	Moderate
2	Control measures were developed for patients with viral hepatitis only	0.55	0.48	Moderate

3	Chemical sterilization techniques are used for all tools	0.63	0.45	Moderate
4	Physical sterilization techniques (heat and radiation) are used for all tools	0.59	0.47	Moderate
5	All germs, including spores, are killed by autoclaving	0.53	0.48	Moderate
6	Instruments need to be decontaminated before sterilization	0.72	0.39	Good
7	The needle used should be inserted into the hole of the resistant container	0.77	0.34	Good
8	Anti-bacterial drugs are limited to, health institutions	0.60	0.46	Moderate
9	People with a history of infectious diseases do not necessarily use infection control measures	0.52	0.49	Moderate
10	Protective clothing is worn when patient care is given as a measure of infection control	0.74	0.37	Good
11	Handling bodily fluids with care and washing hands are one of the most important measures to control infection	0.73	0.38	Good
12	Correct handling of sharps is an effective infection control measure	0.62	0.45	Moderate
13	Correct handling of sharps is a measure of infection control	0.58	0.47	Moderate
Total Knowledge Assessment		0.63	0.43	Moderate

MS: Mean Scores; SD: Standard Deviation; Poor: MS = 0-0.33; Moderate: MS = 0.34-0.66; Good: MS ≥ 0.67

Table 4.2 presents nurses' knowledge and descriptive statistics pertaining to infection prevention and control.

Table (4.3) Nurse knowledge of infection control and prevention examination and mean score:

No	Items	MS	SD	Assess.
1	Wash hands with soap and water before caring for the patient	0.78	0.32	Good
2	Wash hands immediately after unwanted contact with blood, fluids or contaminated materials	0.74	0.37	Good
3	Wearing paws when giving care to the patient	0.79	0.31	Good
4	Dispose of sharps in a safety box	0.81	0.28	Good
5	Wearing glasses to protect the eyes during work that generates splashes of blood or body fluids	0.72	0.39	Good
6	Wearing a mask to protect the nose and mouth	0.71	0.40	Good
7	Re-cap the needle before disposing of it	0.73	0.38	Good

8	Wear protective equipment while collecting and transporting hospital waste	0.74	0.37	Good
9	Wear the professional gown for each procedure	0.63	0.45	Moderate
10	Cover cuts or cuts on the skin before starting work	0.73	0.38	Moderate
11	Containers are available where needles or other sharp items are used	0.70	0.41	Moderate
12	Containers are emptied or disposed of when three-quarters full	0.61	0.46	Moderate
13	Wearing double paws when working with deep body membranes in which paws are likely to be torn or punctured	0.49	0.49	Moderate
14	Infection prevention instructions are available in the workplace	0.33	0.50	Poor
15	Provides policies that encourage infection prevention in hospitals	0.47	0.50	Moderate
Total Knowledge Assessment		0.67	0.40	Moderate

Table 4.3 presents the descriptive data of nurses' practices concerning infection prevention and control.

Table (4.4): Correlation between nurses' knowledge and practices about infection prevention and control:

	Nurses' knowledge
Nurses' Practice	**r = 0.684 ****

Table (4.4) illustrates the association between nurses' knowledge and their practices related to infection prevention and control. A substantial positive association exists between nurses' general knowledge and practice about infection ($r = 0.684$; $P < 0.01$).

Table (4.5) Relationship between the full assessment of nurses' knowledge on infection prevention and control and their demographic information:

Demographic characteristics	**Chi Square**	**df**	**P value**	**Sig.**
Age / years	4.29	2	0.45	NS
Residence	4.77	1	0.23	NS
Level of Education	11.86	2	0.002	HS
Marital Status	2.23	3	0.41	NS
Period of Working in the operation room	2.59	2	0.34	NS
Training course in infection control	12.87	1	0.004	HS
No. of Training Courses	2.85	2	0.68	NS

Table (4.5) examines the relationship between nurses' demographic data and their overall assessment of their knowledge about infection prevention and control, revealing no significant link ($P>0.05$) between the two variables. The two factors that exhibited a significant correlation ($P<0.01$) with nurses' knowledge regarding infection prevention and control were educational attainment and the completion of training courses in infection control.

Table (4.6) Correlation between the full assessment of nurses' practices concerning infection prevention and control and their demographic information:

Demographic characteristic's	Chi Square	df	P value	Sig.
Age / years	3.41	2	0.55	NS
Residence	3.89	1	0.31	NS
Level of Education	10.98	2	0.003	HS
Marital Status	1.35	3	0.48	NS
Period of Working in the operation room	11.99	1	0.005	HS
Training course in infection control	1.99	1	0.35	NS
No. of Training Courses	1.97	2	0.72	NS

Table (4.6) analyzes the correlation between nurses' demographic data and their overall assessment of practice concerning infection prevention and control, indicating a non-significant link (P>0.05) between the variables. Only two variables showed a significant correlation (P<0.01) with nurses' practices for infection prevention and control: educational attainment and duration of employment in the operating room.

4. DISCUSSION

The demographic data of the 93 nurses that comprised the study sample are shown in Table 4.1. The main subgroups of nurses in the study consisted of 36.6% in the 20–26 age range. Furthermore, the results in the above table showed that most nurses had a diploma (45.2%), were married (64.5%), had worked in an operating room for one to seven years, and had completed infection control and prevention training courses (50.9%), with 34.4% having completed one to four of these courses.

Discussion of table (4.2) assessment of nurses' knowledge to prevent infection:

The assessment of the majority of items was deemed moderate; however, the nurses' knowledge of infection prevention and control was assessed as good. The evaluation revealed that nursing knowledge about infection prevention and control was at a modest level, with an overall score of 0.63. In the statistical scoring method employed for this assessment, knowledge is categorized as "poor" if the mean score ranges from 0 to 0.33, "moderate" if the mean score ranges from 0.34 to 0.66, and "good" if the mean score exceeds 0.66.This conclusion contrasts with the findings of Tafere and Belachew, which indicate that participants possess greater knowledge. (8)

Table (4.3) The review of nursing knowledge for infection prevention indicates that most items were assessed as (good, while the nurses' practices were rated as (moderate) for items numbered (9-13) and (bad) for item (14). The comprehensive evaluation of practice is modest (MS=0.67); these findings are corroborated by (9).

Analysis of Table 4.4: Correlation between Nurses' Knowledge and Practice.

Prior research examining infection control among physicians and nurses identified a marginal negative connection between practice and knowledge. A different investigation revealed a negative correlation between nurses' knowledge and their practice of managing surgical site infections. Consequently, the relationship between practice and knowledge remains ambiguous. Table (4.4) analyzes the relationship between nurses' knowledge and their practices for infection prevention and control. The overall infection knowledge of nurses is highly positively connected with their practice (r=0.684; P<0.01).(10)

Discussion of table (4.5) Association between the overall assessment of nurses' knowledge and their demographic data:

The analysis indicates a significant correlation (P<0.01) between nurses' knowledge of infection prevention and control, their educational level, and their completion of infection control training courses. However, there is no significant correlation

(P>0.05) between their demographic information and the overall assessment of their knowledge of infection prevention and control. consistent with Gizaw and Daba in their study. (8)

Table 6: Relationship between nurses' demographic information and the overall assessment of their practice:

The previous study identified no association among the investigated group's age, years of experience, training program, and infection control procedures. Hamid et al. (2010) determined that age and years of experience did not influence infection control strategies. Furthermore, Gijare (2012) identified no statistically significant disparity between the pre- and post-test practice outcomes across all age groups and levels of expertise. Table (4.6) analyzes the correlation between nurses' demographic data and their overall assessment of infection prevention and control practices, revealing no significant correlation (P>0.05), except for educational level (8), (11).

5. CONCLUSIONS

1. The main subgroups of nurses in the study consisted of 36.6% in the 20–26 age range, with the majority of nurses being 20 to 26 years old.
2. The majority of nurses were participating in the infection prevention training course, with most having completed courses 1 to 4.
3. A moderate level of knowledge about infection prevention and control was indicated by the assessment for nurses.
4. There is a significant and positive correlation between nursing practice and knowledge in terms of infection management and prevention.

6. RECOMMENDATIONS

1. Take action to initiate ongoing nurse education to enhance nursing proficiency in infection prevention and control.
2. Expand educational opportunities for nurses in the infection control field.
3. Provide all antibacterial and sterilizing supplies for the operating rooms.

REFERENCES

[1] Ebrahiem Elsayed Aboelfetoh E, Talaat Shakweer T. Effect of An Educational Guidelines on Compliance Level Regarding Standard Precautions Measures among the Operating Room Nurses. Egypt J Heal Care. 2021;12(2):1315–32.

[2] Hyeon YH, Moon KJ. Development of an infection control competency scale for clinical nurses: an instrument design study. BMC Nurs. 2024;23(1):1–11.

[3] Markström I, Bjerså K, Lindström MB, Frisman GH, Falk-brynhildsen K. Prerequisites for infection prevention interventions during the intraoperative phase from the perspective of operating room nurses, An integrative review. Res Sq. 2023;1–37.

[4] Teymourzadeh E, Bahadori M, Fattahi H, Khodadost M, Shokri A. Nurses' competency and their role in prevention and control of hospital infections: A case study in a large military teaching hospital. Adv Hum Biol. 2019;9(2):156.

[5] Massaroli A, Martini JG, Moya JLM, Pereira MS, Tipple AFV, Maestri E. Skills for generalist and specialist nurses working in the prevention and control of infections in Brazil. Rev Lat Am Enfermagem. 2019;27.

[6] Baral R. Infection Prevention Control (IPC), Hospital-acquired infection (HAI), and Obstetrics practice. Nepal J Obstet Gynaecol. 2023;17(1):1–3.

[7] Mohamud RYH, Mohamed NA, Doğan A, Hilowle FM, Isse SA, Hassan MY, et al. Needlestick and Sharps Injuries Among Healthcare Workers at a Tertiary Care Hospital: A Retrospective Single-Center Study. Risk Manag Healthc Policy. 2023;16(November):2281–9.

[8] Gizaw MA, Negawo MK, Bala ET, Daba DB. Knowledge, practice, and associated factors towards postoperative wound care among nurses working in public hospitals in Ethiopia: A multicenter cross-sectional study in a low-resource setting area. Heal Sci Reports. 2022;5(4):1–11.

[9] Elkady, G., Sayed, A., Priya, S., Nagarjuna, B., Haralayya, B., & Aarif, M. (2024). An Empirical Investigation into the Role of Industry 4.0 Tools in Realizing Sustainable Development Goals with Reference to Fast Moving Consumer Foods Industry. In *Advanced Technologies for Realizing Sustainable Development Goals: 5G, AI, Big Data, Blockchain, and Industry 4.0 Application* (pp. 193-203). Bentham Science Publishers.

[10] Nimma, D., Kaur, C., Chhabra, G., Selvi, V., Tyagi, D., & Balakumar, A. (2024, December). Optimizing Mobile Advertising with Reinforcement Learning and Deep Neural Networks. In *2024 International Conference on Artificial Intelligence and Quantum Computation-Based Sensor Application (ICAIQSA)* (pp. 1-6). IEEE.

[11] Katrawi, Anwar & Abdullah, Rosni & Anbar, Mohammed & Alshourbaji, Ibrahim & Abasi, Ammar. (2021). Straggler handling approaches in mapreduce framework: a comparative study Corresponding Author. International Journal of Electrical and Computer Engineering (IJECE). 11. 375-382. 10.11591/ijece.v11i1.pp375-382.

[12] Elkady, G., Sayed, A., Mukherjee, R., Lavanya, D., Banerjee, D., & Aarif, M. (2024). A Critical Investigation into the Impact of Big Data in the Food Supply Chain for Realizing Sustainable Development Goals in Emerging Economies. In *Advanced Technologies for Realizing Sustainable Development Goals: 5G, AI, Big Data, Blockchain, and Industry 4.0 Application* (pp. 204-214). Bentham Science Publishers.

[13] Kaur, C., Al Ansari, M. S., Rana, N., Haralayya, B., Rajkumari, Y., & Gayathri, K. C. (2024). A Study Analyzing the Major Determinants of Implementing Internet of Things (IoT) Tools in Delivering Better Healthcare Services Using Regression Analysis. In *Advanced Technologies for Realizing Sustainable Development Goals: 5G, AI, Big Data, Blockchain, and Industry 4.0 Application* (pp. 270-282). Bentham Science Publishers.

[14] Patel, Ahmed & Alshourbaji, Ibrahim & Al-Janabi, Samaher. (2014). Enhance Business Promotion for Enterprises with Mashup Technology. Middle East Journal of Scientific Research. 22. 291-299.

[15] Praveena, K., Misba, M., Kaur, C., Al Ansari, M. S., Vuyyuru, V. A., & Muthuperumal, S. (2024, July). Hybrid MLP-GRU Federated Learning Framework for Industrial Predictive Maintenance. In *2024 Third International Conference on Electrical, Electronics, Information and Communication Technologies (ICEEICT)* (pp. 1-8). IEEE.

[16] Alshourbaji, Ibrahim & Al-Janabi, Samaher & Patel, Ahmed. (2016). Document Selection in a Distributed Search Engine Architecture. 10.48550/arXiv.1603.09434.

[17] Kaur, C., Al Ansari, M. S., Dwivedi, V. K., & Suganthi, D. (2024). Implementation of a Neuro-Fuzzy-Based Classifier for the Detection of Types 1 and 2 Diabetes. *Advances in Fuzzy-Based Internet of Medical Things (IoMT)*, 163-178.

[18] Alijoyo, F. A., Prabha, B., Aarif, M., Fatma, G., & Rao, V. S. (2024, July). Blockchain-Based Secure Data Sharing Algorithms for Cognitive Decision Management. In *2024 International Conference on Electrical, Computer and Energy Technologies (ICECET* (pp. 1-6). IEEE.

[19] Sharma, R., Singh, D. K., Kumar, P., Khalid, M., Dash, T. R., Vij, B., ... & Kishan, R. THIRD IEEE TECHNICAL SPONSORED INTERNATIONAL CONFERENCE ON SMART TECHNOLOGES AND SYSTEMS FOR NEXT GENERATION COMPUTING (ICSTSN 2024).

[20] Al-khateeb, Maher & Hassan, Mohammad & Alshourbaji, Ibrahim & Aliero, Muhammad. (2021). Intelligent Data Analysis approaches for Knowledge Discovery: Survey and challenges. İlköğretim Online. 20. 1782-1792. 10.17051/ilkonline.2021.05.196.

[21] Tripathi, M. A., Goswami, I., Haralayya, B., Roja, M. P., Aarif, M., & Kumar, D. (2024). The Role of Big Data Analytics as a Critical Roadmap for Realizing Green Innovation and Competitive Edge and Ecological Performance for Realizing Sustainable Goals. In *Advanced Technologies for Realizing Sustainable Development Goals: 5G, AI, Big Data, Blockchain, and Industry 4.0 Application* (pp. 260-269). Bentham Science Publishers.

[22] Ravichandran, K., Virgin, B. A., Patil, S., Fatma, G., Rengarajan, M., & Bala, B. K. (2024, July). Gamifying Language Learning: Applying Augmented Reality and Gamification Strategies for Enhanced English Language Acquisition. In *2024 Third International Conference on Smart Technologies and Systems for Next Generation Computing (ICSTSN)* (pp. 1-6). IEEE.

[23] Preethi, T., Anjum, A., Ahmad, A. A., Kaur, C., Rao, V. S., El-Ebiary, Y. A. B., & Taloba, A. I. (2024). Advancing Healthcare Anomaly Detection: Integrating GANs with Attention Mechanisms. *International Journal of Advanced Computer Science & Applications*, *15*(6).

[24] Rajkumari, Y., Jegu, A., Fatma, G., Mythili, M., Vuyyuru, V. A., & Balakumar, A. (2024, October). Exploring Neural Network Models for Pronunciation Improvement in English Language Teaching: A Pedagogical Perspective. In *2024 International Conference on Intelligent Systems and Advanced Applications (ICISAA)* (pp. 1-6). IEEE.

[25] Alim, Sophia & Alshourbaji, Ibrahim. (2020). Professional uses of Facebook amongst university students in relation to searching for jobs: an exploration of activities and behaviours. International Journal of Social Media and Interactive Learning Environments. 6. 200-229. 10.1504/IJSMILE.2020.10031269.

[26] Orosoo, M., Rajkumari, Y., Ramesh, K., Fatma, G., Nagabhaskar, M., Gopi, A., & Rengarajan, M. (2024). Enhancing English Learning Environments Through Real-Time Emotion Detection and Sentiment Analysis.

International Journal of Advanced Computer Science & Applications, *15*(7).

[27] Tripathi, M. A., Singh, S. V., Rajkumari, Y., Geethanjali, N., Kumar, D., & Aarif, M. (2024). The Role of 5G in Creating Smart Cities for Achieving Sustainable Goals: Analyzing the Opportunities and Challenges through the MANOVA Approach. *Advanced Technologies for Realizing Sustainable Development Goals: 5G, AI, Big Data, Blockchain, and Industry 4.0 Application*, 77-86.

[28] Sharma, M., Chinmulgund, A., Kuanr, J., & Fatma, G. (2024, April). The Future of Teaching: Exploring the Integration of Machine Learning in Higher Education. In *2024 International Conference on Knowledge Engineering and Communication Systems (ICKECS)* (Vol. 1, pp. 1-6). IEEE.

[29] Alhumaid S, Al Mutair A, Al Alawi Z, Alsuliman M, Ahmed GY, Rabaan AA, et al. Knowledge of infection prevention and control among healthcare workers and factors influencing compliance: a systematic review. Antimicrob Resist Infect Control [Internet]. 2021;10(1):1–32. Available from: https://doi.org/10.1186/s13756-021-00957-0

[30] Nations U, Commissioner H. Responding to the Challenge of Non-communicable Diseases United Nations High Commissioner for Refugees. UNDP. 2018; (1): 1–6.

[31] Salu S, Okyere J, Charles-Unadike VO, Ananga MK. Nurses' knowledge on nosocomial infections preventive measures and their associated factors in Ghana: a cross-sectional study. BMC Health Serv Res. 2023;23(1):1–8.