Assessment Protocol: National Assessment of Infection Prevention and Control (IPC) Practices in Public and Private Dental Settings in Jordan

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Submitted to: JMIR Research Protocols
on: May 21, 2024

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Abstract

Background: Infection Prevention and Control (IPC) measures are crucial for ensuring the safety of patients and staff in dental settings. This protocol is for a national assessment of IPC practices in public and private dental clinics and centers in Jordan.

Objective: Objectives: This national assessment seeks to evaluate current adherence to established IPC measures by dental staff, comprehensively identify and assess areas for improvement, and inform the development of policies and guidelines to strengthen IPC practices across both public and private dental settings in Jordan. The findings will be presented in a comprehensive report. Methods: Methods: A cross-sectional design will be used, employing a multistage random sampling technique for selecting a representative sample of 532 dental clinics from across the country (368 private and 164 public), with oversampling employed in the public sector to facilitate an accurate comparison between the two groups. A customized and validated infection prevention checklist will be used for data collection through direct questions and observations. Data will be analyzed using descriptive statistics and weighted mean scores to compare public and private sectors. Results: Results: This assessment is expected to identify gaps, challenges, and areas for improvement in IPC practices across Jordanian dental settings. Conclusions: Conclusions: This national assessment will provide valuable insights into the current state of IPC in Jordanian dental settings that will help inform the development of action plans as well as policies and guidelines to enhance these practices and ultimately improve the standards of care provided at dental settings.

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(JMIR Preprints 21/05/2024:60781)
DOI: https://doi.org/10.2196/preprints.60781

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- **Keywords:** Infection prevention and control (IPC), Dental Settings, Dentistry, Assessment Protocol, Public Health, Jordan

Introduction

Infection Prevention and Control (IPC) serves as the foundation of health care delivery globally, providing the primary line of defense against emerging and ongoing threats in health-related activities, including water, sanitation, and hygiene, ensuring the safety of health workers and patients while also preventing critical global health emergencies such as antimicrobial resistance and sepsis.[1,2] The importance of IPC in guaranteeing the provision of high-quality and safe health care cannot be overstated, making it a crucial component of health emergency preparedness and response.[3,4] The COVID-19 pandemic has further reinforced the critical role of IPC in saving lives globally, underscoring the significance of its continued implementation and advancement in health care systems worldwide.[5,6]

However, barriers such as limited resources and infrastructure, high workload, inadequate training and education, and inconsistent adherence to IPC guidelines continue to pose significant challenges.[7,8] Moreover, health care-associated infections (HAIs) represent a substantial burden on public health, and limited data currently is available on their prevalence in Jordan. Therefore, more extensive studies are needed to identify the national prevalence and determine the necessary actions to combat HAIs and other infections.

In addition to the broader health care setting, paying urgent attention to IPC measures in dental clinics is essential.[9] As oral health care services involve close contact between patients and dental practitioners, the risk of infection transmission is high. This risk was heightened among dental practitioners during the COVID-19 pandemic.[10] Dental clinics must adopt stringent IPC practices to minimize the risk of transmission to, and ensure safe treatment for, patients.[11,12]

The lack of standardized IPC measures in dental clinics across different sectors remains a significant challenge, however. This inconsistency hampers effective IPC implementation and undermines efforts to combat the spread of infections. Studies have shown that compliance with infection control strategies by Jordanian dentists is minimal in both public and private sectors.[7,13] While the most recent studies were conducted decades ago, a knowledge gap exists in Jordan about current IPC practice in dental settings. Therefore, the main objective of this nationwide assessment is to evaluate compliance of dental staff in Jordan with IPC measures and practices. The assessment aims to identify gaps, challenges, and needs that impede adherence to standardized IPC measures and practices and consequently contribute to the spread of infections and diseases.

Methods

Scope of the National Assessment

The national assessment is designed to explore ten critical areas of IPC:

1. Administrative measures and policies
2. Dental health care personnel safety
3. Program evaluation
4. Hand hygiene
5. Personal protective equipment
6. Sharps safety

7. Safe injection practices
8. Device cleaning and sterility
9. Disinfectants
10. Environmental infection prevention and control

The assessment will identify gaps and challenges in each area and provide practical recommendations and guidelines to improve IPC practices.

Assessment Design

The assessment will utilize a cross-sectional design, facilitating data collection across different districts and sectors. This approach allows for a comprehensive comparison against standardized assessment tool criteria, ensuring a thorough examination of IPC practices in various settings. By utilizing this design, the assessment will capture a comprehensive picture of current practices and contribute to a robust evaluation of the overall IPC situation within dental practices.

Assessment Population

The assessment population comprises dental clinics and centers within Jordan, encompassing both public sector clinics within health care centers (primary and comprehensive) and private sector clinics and centers. All clinics included must be duly registered by the Health Professions and Institutions Licensing Directorate at the Jordan Ministry of Health (MOH). This registration ensures that the clinics meet the necessary standards and regulations for inclusion in the assessment.

Inclusion Criteria

1. Private and public dental clinics and centers registered with the Health Professions and Institutions Licensing Directorate at the MOH.
2. Public sector clinics located within MOH primary and comprehensive health care centers.

Exclusion Criteria

1. Public or private clinics within hospital settings including the Royal Medical Services Hospitals.
2. Clinics within rehabilitation centers.
3. Dental clinics supported by the United Nations Relief and Works Agency for Palestine Refugees or by the United Nations Refugee Agency.
4. Dental clinics affiliated with University Hospitals.

These exclusion criteria have been established to maintain the focus on primary dental care settings within health centers and private clinics, excluding specialized or hospital-based facilities to ensure a targeted and representative sample for the assessment.

Sampling

The minimum sample size required to estimate the prevalence of compliance with IPC standards in the assessment is calculated to be 385 clinics. This calculation is based on a 95% confidence level, a 5% margin of error, and a conservative assumption of a 50% prevalence of IPC compliance within the population. According to the MOH, Jordan has 4,021 public and

private dental clinics and centers comprising 3,312 private dental clinics, 240 private dental centers, and 469 public dental clinics. Of those public dental clinics, 346 are in primary health care centers and 123 are in comprehensive health care centers.

To ensure a meaningful comparison between public and private dental clinics and to obtain a more accurate estimate of IPC practices within public settings, an oversampling strategy for public dental clinics will be implemented. Consequently, the total sample size was determined to be 10% of the total private clinics, resulting in a sample of 368 in the private sector (clinics: n=337; centers: n=31), and 35% of the total public clinics, resulting in a sample of 164 public clinics within primary (n=121) and comprehensive (n=43) health care centers.
The sampling frame will include all duly registered dental clinics in Jordan. This frame will be utilized using two major lists (public and private sector clinics) distributed by governorate (n=12), district (n=22), and type (clinic vs. center for private facilities and primary health care center vs. comprehensive health care center for public facilities). Both lists will be generated by the Health Professions and Institutions Licensing Directorate at the MOH.

Multistage probability random sampling technique will be used to identify the sample of clinics to be visited for data collection. At first, dental clinics will be ordered (clustered) by each governorate (n=12). Then, within each governorate (cluster), the clinics will be ordered by district (n=22). The districts will then be stratified as urban or rural districts. The urban districts will correspond to the main city within the governorate while the surrounding districts will be considered rural districts. The list will then be clustered by clinic type (setting) as clinic vs. center for private dental settings and primary vs. comprehensive for public settings. The number of clinics within each district will be identified and multiplied by 10% for private clinics and 35% for the public clinics to calculate the number of clinics to be sampled within each district. A random number generator will be used to select the clinics to be included in the final sample. Two extra clinics from each district will be identified to account for potential loss to follow-up. The distribution of the dental clinics is presented in (**Multimedia Appendix 1**) for the public and the private clinics.

Data Collection Methods

During the assessment, the team will directly ask personnel at the dental clinics or centers questions to gather data. They will also conduct direct observations focusing on IPC practices and enter all collected data (both qualitative and quantitative) into the assessment tool via smartphones. The assessment tool was adapted from the United States Centers for Disease Control's Infection Prevention Checklist for Dental Settings.[14] The tool has been translated to Arabic and validated by the Jordan National Advisory Committee for IPC and public health experts. Comprising a total of 66 questions categorized under different themes/areas of assessment, the tool utilizes a three-point Likert scale (coded as 0 for "not available/not used," 1 for "partially/not completely," and 2 for "available as recommended") for each question (**Multimedia Appendix 2**). Additionally, the tool has a comments section for each question, providing flexibility for data collectors to elaborate and explain a certain situation to deepen the understanding of the assessment team. The coding system will facilitate the calculation of scores for each theme/area of assessment. The tool will undergo a piloting phase and necessary edits before the assessment is fully conducted.

Professionals with extensive experience in IPC and health facilities evaluation will conduct the assessment after receiving training in data collection methods, the assessment tool, and

research ethics. To ensure proficiency, dummy data will be collected from a pilot sample of dental clinics and centers. The data collection phase is expected to involve 15 data collectors working over a span of 20 days.

Data will be directly entered into smartphones, eliminating the use of paper formats. Access to the data will be restricted to the research team responsible for statistical analyses. Participants' consent will be obtained online.

Data Analysis

Data will be compiled in Microsoft Excel and inspected for any potential errors before being entered into ***SPSS version 26*** for analysis. Descriptive statistics (counts and percentages) will be presented for each question. For each survey section, a mean score will be calculated, and the percentage of compliance will be estimated. A comparison of the mean scores will be conducted between the public and private clinics using Student's *t*-test. All the statistical analyses will be weighted to ensure the weighted sampling process between private and public dental clinics is accounted for. Weighted percentages and mean scores will be calculated and presented accordingly.

Data Validation

A data validation team, including members of the MOH's IPC Department, Dental Directorate, and Health Professions and Institutions Licensing Directorate as well as the project team, will conduct visits to a randomly selected subset of the assessed clinics and centers. These visits are designed to validate and ensure the accuracy of the collected data.

Ethical Considerations

This nationwide assessment received approval from the Jordan MOH, which is overseeing the implementation and enforcement of IPC policies and guidelines in the country. This assessment will prioritize transparency and confidentiality in interactions with dental teams at the clinics and centers. No interactions with dental patients are expected and no data is being collected from them or about them. The assessment team will carefully explain the assessment objectives, emphasizing the importance of data confidentiality and explicitly assuring dental teams that no personal information will be collected. They will also share an information sheet (**Multimedia Appendix 3**) that explicitly outlines the aim, scope, and affiliations of the assessment, providing contact information for a specialized unit at the MOH. This unit will be available to validate the assessment and its goals as well as to address any questions related to the assessment.

To uphold ethical standards, the assessment team will pledge complete confidentiality and professionalism by signing a confidentiality form. The team will also diligently disclose any potential affiliations with the staff at assessed clinics, including personal or professional ties. This disclosure aims to ensure transparency, prevent conflicts of interest, and maintain the integrity of the research. The team will adhere to a rigorous ethical approach, actively communicating and signing a conflict-of-interest form (**Multimedia Appendix 4**) to reaffirm their commitment to impartial and unbiased data collection.

Results

This assessment is anticipated to yield valuable insights into the current state of IPC practices within Jordanian dental settings, both public and private. The findings are expected to reveal areas for improvement, highlighting specific challenges in implementing and adhering to IPC practices and measures in dental settings. In addition, the results will draw a comparative analysis across sectors and inform needed actions. This information will be crucial for informing the development of policies and guidelines, strategically targeting identified gaps, and ultimately fostering enhanced IPC practices across Jordan. The anticipated results of this assessment will be detailed in a comprehensive report.

Discussion

This assessment represents a novel approach in Jordan and the region, aiming to identify gaps and challenges in IPC measures and practices within dental settings. It entails using a nuanced assessment tool specifically customized for the Jordanian context. Findings from the assessment will highlight specific areas that demand attention and immediate action. The assessment will also explore variations across geographical regions and sectors, providing valuable insights into potential disparities in IPC practices. To ensure stakeholder buy-in with respect to the findings and encourage behavior change and improvement in practice, we will disseminate the final report through a stakeholder engagement event involving public health institutions from various sectors in Jordan. The dissemination event will serve as a strategic platform to share insights, foster dialogue, and promote collaborative efforts in bolstering IPC measures, thereby contributing to an elevated standard of health care within the country. Ultimately, we strive to improve IPC practices in dental health care across diverse sectors in Jordan, reflecting a significant step toward fostering a safer health care environment.

Acknowledgments

This paper was made possible by the generous support of the American people through the US Agency for International Development Contract No. 7200AA18C00074. We express our sincere gratitude to the Epidemics Administration and the Communicable Diseases Directorate, represented by the Infection Prevention and Control Department, as well as the Dentistry Directorate, the Health Professions and Institutions Licensing Directorate, and the Advisory Committee of Infection Prevention and Control for their invaluable collaboration. Additionally, we extend our appreciation to Mr. Mohammad AlHawamdeh, the General Director of the Jordanian Experts for Training, and Mr. Ali Banni Issa, the Infection Control Manager at Al-Abdali Hospital, for their meaningful contributions to shaping and customizing the assessment tool.

Conflicts of Interest

None declared.

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Abbreviations

HAI: health care-associated infection
IPC: infection prevention and control
MOH: Ministry of Health

Supplementary Files

Multimedia Appendixes

Sample size.
URL: http://asset.jmir.pub/assets/763bdce4c92e3f5d143090508683a7fd.xlsx

Assessment tool.
URL: http://asset.jmir.pub/assets/40f7e855209ebfd1fe6305547ded2f44.docx

Information sheet.
URL: http://asset.jmir.pub/assets/b46d70a4ef6ad65729c8c9294cbc2c11.docx

Conflict of interest.
URL: http://asset.jmir.pub/assets/b2050a8c9f8122170ed3394fcfaa221a.docx