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EXPLORING DENTAL ASSISTANTS' EXPERIENCES WITH FOUR-HANDED DENTISTRY IN SAUDI ARABIA: A QUALITATIVE STUDY

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Abstract

Four-handed dentistry, defined as operators working cooperatively with dental assistants using four hands simultaneously in the oral cavity, is increasingly utilized to enhance efficiency, ergonomics, and quality in dental care delivery. However, perspectives regarding experiences with four-handed clinical techniques among dental assistants are lacking in Saudi Arabia. This qualitative study aimed to address this gap by conducting semi-structured interviews with 15 dental assistants practicing in Riyadh regarding their experiences with and attitudes toward four-handed dentistry. Transcripts were analyzed using an inductive, thematic approach. Participants viewed four-handed dentistry positively as improving time management, efficiency, ergonomics, and teamwork. However, most reported receiving insufficient clinical training on cooperative four-handed techniques during dental assistant education. Key challenges highlighted included maintaining proper infection control with shared workspace, ineffective communication and coordination with dentists, and anxieties when assisting with new advanced procedures. Recommendations encompassed additional clinical education, development of cooperative four-handed protocols, and enhanced communication strategies. Findings provide important insights that can inform continued optimization of four-handed dentistry implementation in Saudi Arabia to enhance dental team productivity, ergonomics, infection control, communication, and quality of care delivery.

Introduction

Traditionally, dentistry was performed by sole practitioners working independently, limiting productivity. However over recent decades, the concept of four-handed dentistry has gained popularity, defined as operators working cooperatively with dental assistants utilizing four hands simultaneously in the oral cavity (ADA, 2015). This approach aims to improve ergonomics, time efficiency, and quality through coordinated division of tasks (ADA, 2015).

Research indicates four-handed dentistry improves productivity, reduces procedural errors, enhances ergonomics and posture for dentists, and increases job satisfaction when well implemented (ADA, 2015; AlHuwaymel et al., 2020). However, achieving optimal benefits depends on training and cohesive teamwork. Assistants' perspectives have crucial implications

for successful adoption (Alkadhi et al., 2017). Though four-handed dentistry is gaining uptake in Saudi Arabia, minimal research exists eliciting dental assistants' experiences and views. Qualitative exploration can provide invaluable insights to guide enhancement efforts. Therefore, this study aimed to address this gap through conducting semi-structured interviews focused on exploring Saudi dental assistants' experiences with four-handed dentistry. Findings can inform continued optimization of cooperative techniques for improving efficiency, ergonomics, infection control, and quality in dental care delivery.

Background

Evolution of Four-Handed Dentistry

Traditionally, dentists worked independently, limiting productivity to only two hands. In the 1970s-80s, the concept of four-handed dentistry evolved, incorporating dental assistants as an integral part of the care team (ADA, 2015). This technique aims to maximize efficiency and quality by having operator and assistant work cooperatively using four hands simultaneously.

Assistants take an active role passing instruments, suctioning, retracting tissues, and coordinating care, while the dentist focuses on the technical procedures. This division of labor has been shown to reduce treatment times and enhance ergonomics (Alkadhi et al., 2017). As dental care has advanced with greater use of technology, multitasking, and complex procedures, four-handed dentistry principles have become increasingly essential.

Proposed Benefits of the Four-Handed Dentistry Model

Multiple benefits are associated with effective four-handed dental practice (ADA, 2015; Alkadhi et al., 2017):

- Increased productivity and efficiency
- Shorter procedure times
- Better ergonomics and posture
- Reduced musculoskeletal strain
- Enhanced infection control with controlled operating field
- Increased quality and procedural accuracy
- Improved patient perceptions and reduced anxiety
- Increased job satisfaction and team morale

However, realizing these benefits depends on training and cohesive cooperation.

The Importance of Dental Assistant Training

Adequate training in four-handed technique is essential for both dentists and assistants to develop the required skills, critical thinking, spatial orientation, ambidexterity, effective communication, and synchronization (Alkadhi et al., 2017).

However, studies globally indicate inconsistencies and deficiencies in clinical education for cooperative four-handed practice (AlHuwaymel et al., 2020). Exploring perspectives can help identify gaps.

Significance in the Saudi Context

No studies were found assessing four-handed dentistry perspectives among Saudi dental assistants. With increasing uptake, gaining insights into assistants' clinical experiences and training in cooperative techniques is crucial for continued optimization in Saudi Arabia.

This study aimed to qualitatively explore dental assistants' experiences with four-handed dentistry implementation to elicit beneficial aspects and highlight areas needing improvement. Findings can inform enhancements.

Aim

To explore dental assistants' clinical experiences with four-handed dentistry in Saudi Arabia including perspectives on training, benefits, challenges, communication, and recommendations to guide effective implementation.

Methods

Study Design and Setting

An exploratory qualitative design was utilized. Participants were dental assistants recruited from dental practices and clinics in Riyadh, Saudi Arabia.

Participants

15 dental assistants participated in semi-structured individual interviews. Purposive sampling ensured inclusion of assistants with at least one year of clinical experience utilizing four-handed dentistry across fields including general dentistry, orthodontics, pediatric dentistry, and oral surgery.

Data Collection

The lead author conducted individual semi-structured interviews lasting 45-60 minutes focused on eliciting participant perspectives regarding:

- Extent of four-handed dentistry training received
- Perceived benefits of cooperative techniques
- Communication and coordination with dentists
- Infection control considerations
- Challenges encountered and recommendations for improvement

Interviews were audio-recorded, translated to English as needed, and transcribed. Field notes captured nonverbal cues and reflections. Data reached saturation.

Qualitative Analysis

Transcripts underwent iterative inductive thematic analysis using principles outlined by Braun and Clarke, involving data familiarization, initial code generation, searching for themes, refining themes, and defining themes (Braun & Clarke 2006). NVivo software aided analysis.

Trustworthiness

Strategies included member checking of findings, thick descriptions, audit trails documenting analysis decisions, reflexivity through reflective memos, and peer debriefing to establish credibility, dependability, confirmability and transferability (Nowell et al., 2017).

Ethical Considerations

Institutional ethics approval and written informed consent were obtained prior to participation. Rights to withdraw and data confidentiality were guaranteed.

Results

Participant Demographics

Table 1 outlines participant demographics. Most were female, aged 25-35 years, with 1-5 years of experience.

Table 1. Interview Participant Demographics

Demographic	**n (%)**
Gender	
Male	4 (27%)
Female	11 (73%)
Age (years)	
20-25	3 (20%)
25-30	5 (33%)
30-35	4 (27%)

Demographic	**n (%)**
>35	3 (20%)
Years Experience	
1-5	9 (60%)
6-10	3 (20%)
>10	3 (20%)

Thematic Findings

Analysis elicited four central themes:

Theme 1: Enhanced Efficiency, Ergonomics, and Time Management

Participants positively viewed four-handed dentistry for enhancing productivity, use of space and time, and reducing physical strain:

"It makes procedures much faster and easier on the dentist's body."

Theme 2: Insufficient Instruction in Cooperative Techniques

However, most noted insufficient education and practice on synchronized four-handed techniques:

"We didn't learn much on working cooperatively in school."

Theme 3: Infection Control Difficulties

Adhering to aseptic technique with two providers in a shared working field posed challenges:

"Avoiding cross-contamination is hard with four hands."

Theme 4: Communication and Anxiety Issues

Participants described struggles with ineffective communication and staying calm when assisting with new advanced procedures:

"I get nervous assisting with surgeries I'm not used to."

Recommendations centered on additional clinical training, protocols, and enhanced communication strategies.

Discussion

This study provides important qualitative insights into dental assistants' experiences with four-handed dentistry in Saudi Arabia. Participants valued four-handed techniques for improving efficiency, ergonomics and time management in line with literature (ADA, 2015). However, insufficient instruction during formal dental assistant training on cooperative clinical skills was a common concern also noted globally (AlHuwaymel et al., 2020). Implementing expanded curricula is crucial for equipping dental graduates with robust collaborative competencies.

Infection control difficulties in the shared working field reinforce existing evidence that four-handed dentistry requires heightened aseptic practices (Alkadhi et al., 2017). Protocols on responsibilities and contingencies can help overcome challenges. Enhanced communication strategies and reassurance are also needed to alleviate procedural anxiety.

As a small single country qualitative study, transferability may be limited. Additional observations could augment self-reported data. However, the rigorous methodology provides trustworthy insights that contribute valued perspectives to inform enhancements in implementing four-handed dentistry.

Overall, findings support the benefits of four-handed dentistry while highlighting key areas for continued optimization related to training, infection control, communication and addressing assistants' procedural uncertainties. Targeted improvements will help realize the full potential of cooperative techniques for enhancing dental team satisfaction, productivity and quality of care.

Conclusion

This exploratory qualitative study provides new insights into Saudi dental assistants' experiences with four-handed dentistry techniques aimed at improving efficiency and quality through cooperative practice. Participants valued four-handed dentistry for benefits of improved time management, ergonomics and productivity but noted insufficient clinical training in synchronized techniques. Key challenges highlighted were maintaining proper infection control in a shared workspace, ineffective dentist-assistant communication, and assistant anxieties when learning new advanced procedures.

Study findings support continued adoption of four-handed dentistry in Saudi Arabia given benefits perceived by dental assistants. However, recommendations encompassed enhancing assistant clinical education in cooperative four-handed skills, developing clear infection control protocols delineating provider responsibilities, implementing communication strategies to optimize coordination, and providing reassurance to assistants when learning new procedures. Addressing highlighted areas requiring optimization will further enhance the advantages of four-handed dentistry for improving dental team satisfaction, ergonomics, aseptic technique, communication and productivity while delivering high quality patient care.

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