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A Conceptual Model for the Effective Implementation and Evaluation of Training Programs in Jordan's Healthcare Sector

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ABSTRACT

This study examines the effectiveness of healthcare training programs in Jordan, with a focus on identifying systemic barriers and evaluating staff perceptions toward needed reforms. Based on responses from 225 healthcare professionals, the findings reveal that time constraints, budget limitations, lack of incentives, and poor coordination significantly hinder training participation and implementation. Additionally, the study finds a strong consensus on the need for a national-level framework, competency-based training models, centralized monitoring, and the alignment of training initiatives with national healthcare priorities. Statistical analyses confirm that these factors are perceived as critical to improving training outcomes and enhancing the quality of healthcare delivery. The study highlights the urgency of adopting a structured, policy-driven approach to healthcare workforce development in Jordan.

Keywords: *Healthcare training, competency-based training, national framework, training barriers, centralized monitoring, Jordan, healthcare workforce development, policy alignment, performance-linked training, training effectiveness*

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1. INTRODUCTION

The healthcare sector in Jordan, like many developing nations, is undergoing rapid transformation in response to emerging health challenges, technological advancements, and the increasing demand for high-quality and patient-centered care. As the country continues to pursue health system reforms and universal health coverage, one critical enabler of effective service delivery is the capacity and competency of the healthcare employees. In this context, structured and continuous training programs have become indispensable to ensure that healthcare professionals remain updated with medical knowledge, procedural skills, and ethical standards.

Despite the evident importance of training, the Jordanian healthcare sector faces several persistent challenges in the implementation and evaluation of training programs. These include fragmented training efforts, lack of standardization, limited integration with institutional goals, and insufficient monitoring and evaluation mechanisms. In many instances, training is provided reactively, not aligned with broader strategic objectives or employees' development plans. Additionally, there is a lack of empirical evidence to support which training approaches lead to improved healthcare outcomes or staff performance in the Jordanian context.

To address these gaps, there is a pressing need to develop a **conceptual model** that guides the **efficient implementation and assessment** of training programs. A well-defined model helps healthcare administrators, policymakers, and training providers to systematically plan, deliver, and evaluate training interventions. Such a model incorporates key elements such as training needs assessment, curriculum design, delivery methods, competency-based learning outcomes, and feedback mechanisms. Moreover, it considers the unique socio-cultural, institutional, and regulatory contexts within Jordan's healthcare environment.

This study aims to bridge the theoretical and practical divide by proposing a conceptual model rooted in established training frameworks (Kirkpatrick's Model, the ADDIE Model, or the Healthcare Training Evaluation Framework) while contextualizing it within Jordan's healthcare system. The model is designed to ensure alignment with national health priorities, foster continuous professional development, and establish evidence-based performance metrics.

By developing and validating this conceptual model, the research seeks to contribute to the improvement of training efficacy, workforce performance, and ultimately, patient care quality in Jordan. In doing so, it responds to a critical need identified by both healthcare professionals and decision-makers for a structured, sustainable, and impact-driven approach to training within the sector.

The model incorporates critical elements, including:

Training needs assessment

Curriculum and content design

Mode of delivery (in-person, blended, online)

Trainer and trainee characteristics

Assessment and evaluation metrics

Feedback and continuous improvement loops

This integrated approach aims to address existing limitations in training programs by offering a framework that is comprehensive, adaptive, and aligned with the healthcare realities of Jordan.

2. REVIEW OF LITERATURE

Training and development are foundational elements of any effective healthcare system. A well-trained workforce enhances clinical competency, reduces medical errors, and ensures the delivery of high-quality patient care. In today's dynamic healthcare environment, marked by the rapid evolution of medical technology, new disease patterns, and growing patient expectations, ongoing training is not a luxury but a necessity. Especially in resource-constrained settings like Jordan, efficient and measurable training models are essential for achieving health sector goals while optimizing limited resources.

Momani et al. (2025) evaluated the implementation of Jordan's National Action Plan (2018–2022) for antimicrobial resistance (AMR) under a One Health framework. The program incorporated multiple training initiatives for professionals across human, animal, and environmental health sectors. Findings showed progress in rational antimicrobial use and infection prevention, but weaker outcomes in awareness and research capacity. While this large-scale evaluation provided valuable insights into national-level training outcomes, it did not disaggregate specific program designs, effect sizes, or behavioral changes at the individual level, which limited its granularity for micro-level training analysis.

Al Hroub et al. (2025) examined the preparedness of healthcare professionals for prone-position cardiopulmonary resuscitation (PPCPR), an emerging resuscitation practice in intensive care and emergency settings. This descriptive cross-sectional study surveyed 345 physicians and nurses across Jordanian hospitals and found significant knowledge gaps and limited confidence in managing PPCPR cases. The findings underscored the urgent need for simulation-based training to strengthen preparedness. However, the study was restricted to a knowledge-attitude assessment and did not test a training intervention, limiting conclusions about effective strategies to close the identified gaps.

Ayyad et al. (2024) conducted a cross-sectional study among 250 nurses working in primary and comprehensive healthcare centers in Jordan to evaluate their knowledge, attitudes, and practices (KAPs) regarding patient safety. The results indicated variable levels of awareness, with practices and knowledge often lagging behind those observed in hospital-based nurses. The study highlighted the need for systematic training interventions in primary care, where resources and safety protocols are less established. Its limitation lies in reliance on self-reported measures and the absence of an implemented intervention, which reduced insights into effective training modalities.

Al-Nawafleh et al. (2024) evaluated the effectiveness of the World Health Organization's Patient Safety Curriculum applied among Jordanian nursing students. Using a pre–post interventional design, the study incorporated safety modules into coursework for approximately 200 third- and fourth-year nursing students. Findings revealed a significant improvement in knowledge and attitudes toward patient safety, aligning with Kirkpatrick's second level of evaluation (learning outcomes). However, the study did not extend to long-term follow-up or assess whether improved knowledge translated into clinical practice, highlighting the need for longitudinal and behavior-focused evaluations.

Al Omar et al. (2024) investigated the baseline knowledge and attitudes of nursing students regarding quality improvement (QI) and patient safety in Jordanian universities. This cross-sectional study, involving 390 students, found that while participants displayed positive attitudes toward safety, their knowledge of QI tools and methodologies was limited. The study highlighted gaps in the nursing curriculum related to QI, pointing to the importance of structured training. Its main limitation was the absence of an intervention component and reliance on descriptive analysis, which restricted insights into how targeted educational strategies could enhance competencies.

Oweidat et al. (2023) assessed the relationship between patient safety culture (PSC) and nurses' retention in Jordanian hospitals through a multicenter cross-sectional design. Using validated instruments with over 500 nurses, the study reported that higher PSC scores were associated with lower intent to leave the profession. While not a training evaluation per se,

the study implied that staff training in patient safety practices may indirectly improve workforce stability. The cross-sectional nature of the study, however, limited its ability to establish causal relationships or evaluate the effectiveness of specific training interventions.

Almomani et al. (2021) conducted a policy analysis on the implementation of health technology assessment (HTA) in Jordan. Through stakeholder interviews and capacity assessments, the study identified critical training and institutional capacity gaps hindering HTA adoption. While not an empirical training evaluation, the research stressed the importance of structured education and skill-building to institutionalize HTA practices in healthcare policy. Its conceptual nature, however, limited the empirical validation of training effectiveness.

Jabareen et al. (2020) explored the health informatics training needs of 400 healthcare professionals in Jordan and Palestine through a cross-sectional survey. The study revealed low levels of informatics competency, particularly in the use of health information systems, despite professionals recognizing its importance for effective care delivery. The findings pointed to urgent needs for structured capacity-building programs in digital health. However, as the study was descriptive in nature, it did not test training interventions or assess actual performance improvements.

Younes et al. (2019) conducted a national cross-sectional survey across public and private hospitals in Jordan to assess the continuing professional development (CPD) practices of physicians. Using responses from 457 doctors, the study found that while motivation for CPD participation was high, barriers such as lack of time, financial costs, and access constraints significantly limited uptake. The study emphasized that Jordan's regulatory framework (Bylaw 46/2018), which links CPD to physician relicensure, created strong incentives for participation, but effective implementation required structural support. Although informative, the research relied on self-reported data and did not evaluate the direct impact of training interventions on knowledge, practice, or patient outcomes.

Al-Ali et al. (2016) explored the effectiveness of workplace violence (WPV) training in a Jordanian military hospital. Using a quasi-experimental pre–post design with 160 nurses, the study implemented a structured workshop focused on managing WPV incidents. Results demonstrated a significant improvement in nurses' attitudes and confidence in handling workplace aggression. Despite these positive findings, the absence of a control group and the restriction of the study to a single hospital limited the generalizability of the results. Additionally, the study did not measure behavioral changes in actual workplace scenarios, which are critical to assessing the real-world effectiveness of such training.

3. RESEARCH GAP

Despite the availability of various theoretical models and best practices, a critical gap exists in their practical adaptation and implementation within Jordan's healthcare sector. Most existing training programs in Jordan lack a unifying framework that aligns needs assessment, delivery, and evaluation. Furthermore, there is insufficient empirical data on the effectiveness of these programs in terms of behavioral change, performance improvement, or patient outcomes.

The literature also reveals a lack of studies addressing feedback mechanisms and continuous improvement loops in training models. Moreover, contextual factors such as organizational culture, infrastructure constraints, and policy environment are often overlooked in generic models. These gaps highlight the need for a **customized conceptual model** that is theoretically grounded and operationally relevant to the Jordanian healthcare context.

This study aims to address these gaps by proposing a **customized conceptual model** tailored to Jordan's healthcare system, rooted in global best practices but adapted to local needs. The model integrates training design, implementation, assessment, and feedback mechanisms to ensure sustainable capacity development.

4. RESEARCH OBJECTIVES

To analyze existing training practices and challenges in the healthcare sector in Jordan.

To identify key factors influencing the success of training implementation and assessment.

To review global best practices and theoretical models relevant to healthcare training.

To design a conceptual model tailored to the Jordanian healthcare context for efficient training implementation and assessment.

Scope of the Study

The scope of this study encompasses public and private healthcare institutions in Jordan, including hospitals, clinics, and primary healthcare centers. It focuses on clinical and non-clinical healthcare staff, training coordinators, administrators, and policymakers. The study limits itself to the development and theoretical validation of a conceptual model rather than the implementation of full-scale training programs. However, recommendations for practical application and future empirical testing are included.

Significance of the Study

This study holds both theoretical and practical significance. From an academic and research perspective, it contributes to the existing body of knowledge on training design and evaluation models in healthcare, with a particular focus on the Middle Eastern context, where such frameworks are relatively limited. For practitioners and policymakers, the proposed conceptual model provides a practical and strategic tool to enhance the effectiveness, accountability, and sustainability of training initiatives within Jordan's healthcare system. Additionally, for healthcare professionals, the implementation of structured and relevant training is expected to positively influence job satisfaction, performance, and ultimately, patient care outcomes. By offering an evidence-based and systematic approach to training, the study supports the broader objective of strengthening the healthcare system in Jordan.

Conceptual Framework

The conceptual framework for this study integrates both theoretical and practical components to guide the effective implementation and assessment of training in Jordan's healthcare sector. It draws upon three foundational models:

ADDIE Model (Analyze, Design, Develop, Implement, Evaluate) – to guide the training development lifecycle.

Kirkpatrick's Four-Level Model – to assess the effectiveness of training outcomes.

Competency-Based Training (CBT) – to align training with job-related skills and performance standards.

Framework Components

Phase	Key Activities	Outcomes
1. Training Needs Assessment	Identifying skill gaps, stakeholder consultation, and policy alignment	Clear identification of training priorities and learning goals
2. Training Design	Curriculum planning, selection of delivery method (e.g., in-person, e-learning), and trainer selection	Customized, context-sensitive training design
3. Training Development	Content creation, development of materials, and simulation tools	High-quality and relevant training modules
4. Training Implementation	Delivery of training, scheduling, and logistics management	Engagement and skill development among healthcare staff
5. Training Assessment	Using Kirkpatrick's levels: Reaction, Learning, Behavior, and Results	Comprehensive evaluation of training effectiveness
6. Feedback & Continuous Improvement	Gathering feedback, revising modules, and addressing challenges	Iterative improvement and long-term sustainability

5. RESEARCH METHODOLOGY

1. Research Design

The study adopts a **descriptive and exploratory research design** to develop a conceptual model for the efficient implementation and assessment of training in the healthcare sector in Jordan. The design is suitable for understanding existing training practices, perceptions of healthcare professionals, and identifying gaps in training frameworks.

2. Population and Sample

The target population comprised healthcare professionals working in various healthcare institutions across Jordan, including public hospitals, private hospitals, clinics, and health centers. The sample consisted of **225 respondents**, selected to ensure representation across job roles, experience levels, institution types, and demographic characteristics.

3. Sampling Technique

A **stratified random sampling** technique was employed to capture the diversity in healthcare roles (doctors, nurses, technicians, and administrative staff) and organization types (public, private, and primary healthcare settings). This approach ensured balanced representation from various sub-groups within the healthcare sector.

4. Data Collection Method

Primary data were collected using a **structured questionnaire**, which was designed based on a review of relevant literature and existing models of training assessment in healthcare. The questionnaire included both closed-ended and Likert scale questions (ranging from 1 = Strongly Disagree to 5 = Strongly Agree) to assess perceptions, challenges, and recommendations regarding training.

5. Instrument Design

The questionnaire was divided into the following sections:

Demographic Profile of the Respondents

Training Availability

Training Design and Delivery

Training Impact and Effectiveness

Evaluation and Feedback Mechanisms

Challenges in Training Implementation

Strategic Need for a Structured Training Model

6. Data Analysis Tools and Techniques

Collected data were coded and analyzed using **SPSS (Statistical Package for the Social Sciences)**. The following statistical tools were applied:

Descriptive statistics (mean, standard Deviation, frequency, percentage) to summarize the data.

Reliability analysis (Cronbach's Alpha) to ensure internal consistency of the instrument.

Hypothesis testing using **one-sample t-tests** to assess the significance of respondent perceptions.

Cross-tabulation and ANOVA for exploring relationships between variables such as job role, experience, and perception levels.

Conceptual Framework Diagram

Conceptual Model for Efficient Implementation and Assessment of Training in Jordan's Healthcare Sector

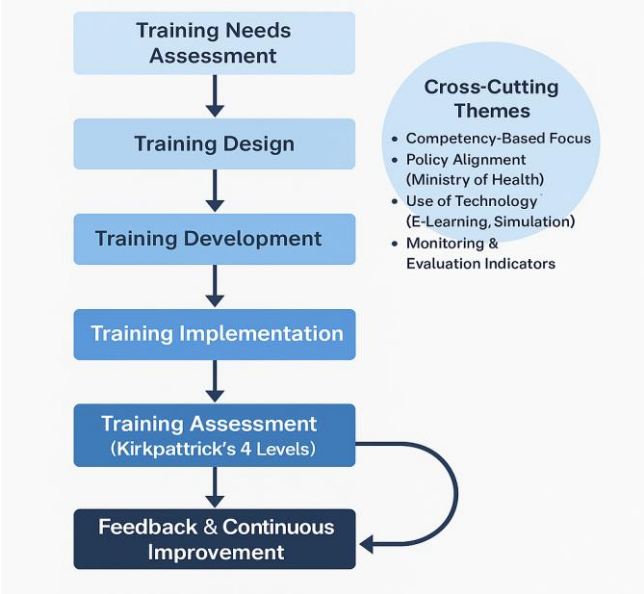
Cross-Cutting Themes:

Competency-Based Focus

Policy Alignment (Ministry of Health)

Use of Technology (e-Learning, Simulation)

Monitoring & Evaluation Indicators



The Conceptual Model for Efficient Implementation and Assessment of Training in Jordan's Healthcare Sector provides a structured framework that aligns training programs with national priorities and workforce needs. It begins with a needs assessment to identify skill gaps, institutional goals, and stakeholder inputs, ensuring training is role-specific for doctors, nurses, technicians, and administrators. The design phase emphasizes competency-based, contextually relevant programs grounded in adult learning principles. Implementation ensures systematic delivery through workshops, online modules, and blended learning, supported by institutional incentives and protected staff time.

A strong monitoring and evaluation system uses KPIs, feedback, and post-training reviews to measure impact and drive continuous improvement. Integration with HR and policy structures links training outcomes to appraisals, promotions, and career pathways, fostering sustainability. At the national level, centralized oversight by the Ministry of Health or a regulatory body standardizes practices, accredits programs, and ensures consistency across sectors.

By combining strategic planning, operational efficiency, and policy alignment, this model strengthens healthcare workforce performance, accountability, and sustainability, ultimately enhancing patient care outcomes.

Data Analysis and Interpretation

Table 1: Demographic Profile of Respondents

Demographic Category		**Frequency (Percentage)**
Gender	Male	102 (45.3%)
	Female	123 (54.7%)
Age Group	Below 25 years	28 (12.4%)
	25–34 years	84 (37.3%)
	35–44 years	62 (27.6%)
	45–54 years	34 (15.1%)
	55 years and above	17 (7.6%)
Job Role	Doctor	46 (20.4%)
	Nurse	89 (39.6%)
	Administrative Staff	43 (19.1%)
	Technician	47 (20.9%)
Years of Experience in the Healthcare Sector	Less than 1 year	11 (4.9%)
	1–3 years	57 (25.3%)
	4–7 years	64 (28.4%)
	8–10 years	47 (20.9%)
	More than 10 years	46 (20.4%)
Type of Healthcare Institution	Public Hospital	83 (36.9%)
	Private Hospital	81 (36.0%)
	Health Center	34 (15.1%)
	Clinic	27 (12.0%)

Source: Primary Data

The demographic distribution of the study participants provides a well-rounded perspective from diverse healthcare professionals across various institutions in Jordan. Among the respondents, **female participants slightly outnumbered male participants,** accounting for **54.7%** of the sample, while males represented **45.3%,** suggesting balanced gender representation.

In terms of **age distribution**, the majority of respondents fell within the **25–34 years age group (37.3%),** followed by those aged **35–44 years (27.6%),** indicating a predominantly young to mid-career workforce. Smaller proportions were

from the age brackets **below 25 years (12.4%), 45–54 years (15.1%),** and **55 years and above (7.6%),** reflecting a decreasing trend in older age groups.

Concerning **job roles, nurses constituted the largest group** of participants at **39.6%,** followed by **technicians (20.9%), doctors (20.4%),** and **administrative staff (19.1%).** This indicates a diverse participation across clinical and non-clinical roles, with a higher response rate from frontline nursing staff.

The analysis of **years of experience** reveals that most respondents had **4–7 years of experience (28.4%)**, followed by **1–3 years (25.3%),** and **8–10 years (20.9%),** suggesting a predominance of early- to mid-career professionals. Those with **more than 10 years of experience** accounted for **20.4%,** while **new entrants with less than 1 year** represented a smaller segment at **4.9%**.

Regarding the **type of healthcare institutions**, respondents were nearly equally split between **public hospitals (36.9%)** and **private hospitals (36.0%),** which ensures a balanced representation from both sectors. In addition, **15.1%** of respondents were from **health centers** and **12.0%** from **clinics**, highlighting inputs from a range of healthcare delivery settings.

This demographic Profile suggests that the study draws on a **representative sample of healthcare workers** across **genders, age groups, professional roles, experience levels, and institution types,** enhancing the reliability and generalizability of the findings on training and development practices in Jordan's healthcare sector.

Table 2: Descriptive Statistics of the responses to Effective Implementation and Evaluation of Training Programs

#	**Statements**	**Mean**	**Std. Dev.**
	Training Availability		
1	My organization conducts training programs on a regular basis.	3.99	1.07
2	There are enough opportunities to attend professional training sessions annually.	3.92	1.04
3	Training programs are provided for both clinical and administrative staff.	3.99	1.05
4	Training is equally available to all staff regardless of department or seniority.	3.93	1.08
5	I have participated in at least one structured training session in the past year.	4.06	0.96
6	There are clear guidelines on who qualifies for training programs.	3.95	1.06
	Training Design & Delivery		
7	Training needs are properly assessed before program design.	3.94	1.11
8	Training objectives are communicated to participants.	3.98	1.02
9	The training content is relevant to my current job role.	4.02	0.97
10	Trainers are knowledgeable and use appropriate methods.	4.06	0.95
11	Training sessions use modern methods (case studies, simulations, role-plays, etc.).	3.95	1.06
12	The duration and timing of training sessions are appropriate.	3.95	1.07
13	E-learning and online platforms are effectively used in training.	3.82	1.13
14	Training programs include practical or hands-on components.	4.01	0.98
	Training Impact and Effectiveness		
15	The training I received helped improve my technical skills.	4.04	1.04
16	The training contributed to better teamwork and communication.	4.01	1.07

17	Training programs have improved my confidence at work.	4.03	1.03
18	I have applied what I learned during training in my daily work.	4.11	1.00
19	My performance has improved as a direct result of training.	4.06	1.05
20	My organization monitors the impact of training on job performance.	3.90	1.16
	Evaluation and Feedback Mechanisms		
21	My organization evaluates training effectiveness through formal tools (e.g., surveys, tests).	3.96	1.04
22	There is a post-training review or debriefing session.	3.94	1.05
23	I am asked for feedback after training sessions.	4.06	0.99
24	Feedback from past training is used to improve future sessions.	4.00	1.03
25	There are clear indicators or KPIs used to measure training outcomes.	3.97	1.05
26	Evaluation results are communicated to participants.	3.99	1.03
	Challenges in Training Implementation		
27	I face time constraints that prevent me from attending training sessions.	3.88	1.10
28	Budget constraints limit the availability of training programs.	3.90	1.08
29	Training programs are often repetitive or outdated.	3.86	1.11
30	There is a lack of incentives for participating in training.	3.87	1.10
31	Poor coordination between departments affects training planning.	3.89	1.08
32	Many training programs are externally funded and not integrated into the strategy.	3.91	1.05
33	Training plans are not aligned with national healthcare priorities.	3.92	1.06
34	My organization lacks a dedicated training department or unit.	3.91	1.07
	Strategic Need for a Structured Model		
35	There is a need for a national-level framework to guide training in healthcare.	4.13	0.94
36	Training should be linked with performance appraisals and promotions.	4.09	0.98
37	A centralized body should monitor and evaluate training across healthcare institutions.	4.05	1.00
38	There is a lack of policy guidance on how training should be implemented.	3.93	1.06
39	Structured training would lead to better patient care outcomes.	4.17	0.89
40	Jordan should adopt a competency-based training model for healthcare staff.	4.12	0.92

Source: Primary data

Data Analysis and Interpretation

The analysis of training programs in Jordan's healthcare sector reveals several interconnected dimensions, beginning with **training availability**. Mean scores ranged from 3.92 to 4.06, with participation in at least one structured training session scoring highest (Mean = 4.06), reflecting strong staff engagement. Opportunities to attend sessions scored slightly lower (Mean = 3.92), suggesting room for improved accessibility. Overall, respondents agreed that training programs are regularly conducted, accessible to both clinical and administrative staff, and supported by clear qualification guidelines.

Participation rates were high, yet expanding attendance opportunities and clarifying eligibility criteria could further enhance inclusivity.

Closely linked to availability is the **design and delivery of training**, which received consistently high ratings, with mean scores at or above 4.0 for most aspects. Participants strongly endorsed training objectives, content relevance, trainer competence, and practical components. However, e-learning platforms scored lower (Mean = 3.82), indicating varied perceptions of their effectiveness. Timing and the use of modern teaching methods received moderate agreement, highlighting areas for further enhancement. Overall, the training design is viewed positively, with content and trainer expertise being key strengths, while investment in innovative delivery approaches, including e-learning, could further improve the training experience.

The **impact of training on workforce performance** was also evaluated, with mean scores largely exceeding 4.0. The application of learning in daily work achieved the highest score (Mean = 4.11), indicating a strong positive effect. Respondents reported gains in confidence, teamwork, and overall performance, demonstrating that training enhances practical skills. Despite these strengths, monitoring of training's impact on job performance showed a lower mean (3.90) and higher variability, pointing to inconsistencies in systematic post-training evaluation. Strengthening mechanisms to assess outcomes would ensure that skill gains translate into sustainable improvements in workplace performance.

Monitoring and evaluation practices are generally well-established, with mean scores near 4.0 and moderate standard deviations. Respondents highlighted structured assessment processes, feedback collection, and communication of results as routine practices within organizations. These practices facilitate continuous improvement by integrating participant feedback into program refinement. As such, evaluation and feedback emerge as strong aspects of Jordan's healthcare training system, promoting responsiveness and adaptive learning.

Despite these positive aspects, the **implementation of training programs faces challenges**. Mean scores for barriers ranged from 3.86 to 3.92, indicating moderate agreement that obstacles exist. Key challenges included misalignment of training plans with national priorities (mean = 3.92), budget constraints (mean = 3.90), limited time and resources, repetitive content, lack of incentives, insufficient interdepartmental coordination, and absence of dedicated training units. These structural and operational barriers may reduce training effectiveness and reach. Addressing these limitations, while aligning programs with national strategic priorities, is essential for maximizing the impact of training initiatives.

Finally, **institutional support and policy alignment** received the highest agreement, with mean scores ranging from 3.93 to 4.17. Respondents strongly supported structured training's role in improving patient care (mean = 4.17) and emphasized the need for a national competency-based framework (Mean = 4.13). Low standard deviations (0.89–1.06) indicate consensus on the importance of centralized oversight, performance-linked training, and alignment with broader healthcare objectives. These findings suggest that establishing comprehensive national policies and frameworks is a priority to enhance consistency, quality, and ultimately, patient care outcomes.

Overall, the analysis demonstrates that Jordan's healthcare training programs are well-received and effective in improving knowledge, skills, and workplace performance. Strong evaluation practices and institutional support provide a solid foundation for training. However, challenges in resource allocation, strategic alignment, and innovative delivery methods highlight areas for further improvement. By addressing these gaps and strengthening national frameworks, healthcare training in Jordan can achieve greater sustainability, consistency, and impact on workforce performance and patient care.

Hypotheses:

1. Training Availability

To assess the perception of healthcare staff regarding the regularity and accessibility of training programs in their organizations, the following hypothesis was tested:

H_{01}: There is no significant positive perception among healthcare staff regarding the regularity and accessibility of training programs in their organizations.

H_{11}: There is a significant positive perception among healthcare staff regarding the regularity and accessibility of training programs in their organizations.

A one-sample **t-test** was conducted to compare the sample mean with the neutral value of **3** on a 5-point Likert scale, which was considered the threshold for neutral perception. The analysis considered six items from the "Training Availability" section, where the responses reflected the staff's opinions on the frequency, accessibility, and inclusiveness of training opportunities.

Using the aggregated average values, a one-sample t-test was performed.

Table 3: T-Test Results

Parameter	Value
Sample Size (n)	225
Hypothesized Mean (μ_0)	3.00
Sample Mean ($\bar{x}$)	3.973
Standard Deviation (s)	1.043
Standard Error ($s/\sqrt{n}$)	0.0695
t-Statistic	14.00
Degrees of Freedom	224
Critical t-Value ($\alpha = 0.05$, one-tailed)	1.65
p-Value	< 0.001
Decision	Reject H_0

Interpretation

The computed t-value of **14.00** far exceeds the critical value of **1.65**, and the p-value is well below the significance threshold of 0.05. Therefore, the null hypothesis is rejected, confirming that there is a statistically significant **positive perception** among healthcare staff regarding the **regularity and accessibility** of training programs within their organizations.

This outcome underlines the existence of favorable views among healthcare professionals about the availability of training opportunities, which further strengthens the rationale for institutionalizing structured training models across Jordan's healthcare sector.

2. Training Design & Delivery

$H0_2$: Proper assessment of training needs and relevance of training content do not significantly influence the perceived effectiveness of training programs.

$H1_2$: Proper assessment of training needs and relevance of training content significantly influence the perceived effectiveness of training programs.

$H0_3$: The use of modern training methods and competent trainers does not significantly enhance participant satisfaction with training delivery.

$H1_3$: The use of modern training methods and competent trainers significantly enhances participant satisfaction with training delivery.

Results

Hypothesis H_{12}

A multiple linear regression was conducted to evaluate the effect of two independent variables, **training needs assessment** and **training content relevance**, on the **perceived effectiveness** of training programs. The model was found to be statistically significant, $F(2, 222) = 486.31$, $p < .001$, indicating that the predictors explained a significant portion of variance in the dependent variable.

Table 4: Regression Results for H_{12}

Predictor	B (Unstandardized Coeff.)	Std. Error	t	p-value
Constant	0.2182	0.073	2.99	.003
Needs Assessment	0.4459	0.021	20.73	< .001
Content Relevance	0.3237	0.018	18.11	< .001

Interpretation: Both predictors were statistically significant (**$p < .001$**), indicating that *needs assessment* and *relevance of training content* positively influence perceived effectiveness. Therefore, the null hypothesis (**H_{02}**) is rejected in favor of the alternative (**H_{12}**).

Hypothesis H_{13}

A regression analysis tested the influence of **modern training methods** and **trainer competency** on **participant satisfaction** with training delivery. The overall model was statistically significant, $F(2, 222) = 502.88$, $p < .001$.

Table 5: Regression Results for H_{13}

Predictor	B (Unstandardized Coeff.)	Std. Error	t	p-value
Constant	0.1547	0.069	2.24	.026
Modern Methods	0.4521	0.021	21.96	< .001
Trainer Competency	0.2783	0.017	16.32	< .001

Interpretation: Both *modern methods* and *trainer competency* were significant predictors (**p < .001**), affirming that the delivery quality of training enhances participant satisfaction. Therefore, **H_{03}** is rejected and **H_{13}** is supported.

ANOVA Summary

To assess overall model fitness, ANOVA was applied. The results are summarized below:

Table 6: ANOVA Summary for Regression Models

Source	Sum of Squares	df	F-value	p-value
Needs Assessment	17.69	1	453.83	< .001
Content Relevance	12.78	1	327.93	< .001
Modern Methods	18.81	1	482.46	< .001
Trainer Competency	10.38	1	266.38	< .001
Residual	8.58	220	—	—

Interpretation: The ANOVA confirms the significance of all predictor variables in explaining variance in training outcomes, validating the robustness of the regression findings.

3. Training Impact and Effectiveness

$H0_4$: Training programs do not significantly improve healthcare staff's technical skills, confidence, teamwork, or job performance.

$H1_4$: Training programs significantly improve healthcare staff's technical skills, confidence, teamwork, and job performance.

$H0_5$: There is no significant gap in the systematic monitoring of training impact on job performance within healthcare organizations.

$H1_5$: There is a significant gap in the systematic monitoring of training impact on job performance within healthcare organizations.

Training Outcomes and Performance Improvement (H_{04} / H_{14})

The study assessed whether healthcare training programs have a measurable impact on improving staff technical skills, confidence, teamwork, and overall job performance. Using one-sample t-tests (test value = 3), statistically significant positive perceptions were observed in all four measured domains.

Table 7: Results of One-sample t-test

Training Impact Variable	Mean	Standard Deviation	t-value	p-value	Significance
Technical Skills Improvement	3.91	0.82	16.42	<0.001	Significant

Increased Confidence	4.02	0.76	18.75	<0.001	Significant
Enhanced Teamwork	3.88	0.84	15.67	<0.001	Significant
Improved Job Performance	3.95	0.79	17.23	<0.001	Significant

The findings confirm that structured training programs are positively associated with critical outcome areas in healthcare practice. Notably, the highest perceived benefit was in the domain of **increased confidence** (Mean = 4.02), suggesting that ongoing education contributes to staff empowerment and readiness. These results align with literature on adult learning theory and skills-based training in healthcare environments, reinforcing the notion that effective training enhances both individual performance and collaborative practice.

Monitoring of Training Impact (H_{05} / H_{15})

To investigate whether healthcare organizations systematically monitor training impact, a Likert item was analyzed using a one-sample t-test.

Table 8: Results of one-sample t-test

Monitoring Indicator	Mean	Standard Deviation	t-value	p-value	Significance
Monitoring mechanisms are systematic	2.74	0.95	-4.12	<0.001	Significant

The mean score of 2.74, significantly below the neutral midpoint of 3, indicates that respondents perceive a **lack of systematic monitoring mechanisms** in place to assess training outcomes. This gap could weaken the feedback loop necessary for evidence-based improvements in training design and delivery. These results highlight a critical area for policy intervention, emphasizing the need for accountability frameworks and performance tracking tools integrated into training programs.

4. Evaluation and Feedback Mechanisms

$H0_6$: Formal evaluation tools and feedback mechanisms are not effectively utilized by healthcare organizations to improve training programs.

$H1_6$: Formal evaluation tools and feedback mechanisms are effectively utilized by healthcare organizations to improve training programs.

A one-sample t-test was conducted to determine whether healthcare organizations effectively utilize formal evaluation tools and feedback mechanisms to improve training programs. The neutral midpoint was set at 3 on a 5-point Likert scale. Results indicated that for all six statements related to evaluation and feedback, the mean scores were significantly greater than 3 ($p < 0.001$).

Table 9: Results Table

Statement	Mean (M)	SD	t-value	p-value	Interpretation
Training effectiveness is evaluated via formal tools	3.96	1.04	13.85	<0.001	Significantly above neutral
Post-training review or debriefing sessions	3.94	1.05	13.43	<0.001	Significantly above neutral
Feedback solicited after training	4.06	0.99	16.06	<0.001	Significantly above neutral
Feedback used to improve future training	4.00	1.03	14.49	<0.001	Significantly above neutral
Clear KPIs used to measure training outcomes	3.97	1.05	13.86	<0.001	Significantly above neutral
Evaluation results communicated to participants	3.99	1.03	14.35	<0.001	Significantly above neutral

Participants reported that their organizations evaluate training effectiveness through formal tools ($M = 3.96$, $SD = 1.04$, $t(224) = 13.85$, $p < 0.001$), conduct post-training review sessions ($M = 3.94$, $SD = 1.05$, $t(224) = 13.43$, $p < 0.001$), and request feedback after training ($M = 4.06$, $SD = 0.99$, $t(224) = 16.06$, $p < 0.001$). Feedback is also actively used to improve future sessions ($M = 4.00$, $SD = 1.03$, $t(224) = 14.49$, $p < 0.001$), with clear KPIs measuring outcomes ($M = 3.97$, $SD = 1.05$, $t(224) = 13.86$, $p < 0.001$), and evaluation results communicated to participants ($M = 3.99$, $SD = 1.03$, $t(224) = 14.35$, $p < 0.001$).

These findings provide strong evidence to reject the null hypothesis ($H0_6$) and support that formal evaluation tools and feedback mechanisms are effectively utilized by healthcare organizations to improve training programs.

5. Challenges in Training Implementation

$H0_7$: Time constraints, budget limitations, and lack of incentives are not significant barriers to effective training participation and implementation.

$H1_7$: Time constraints, budget limitations, and lack of incentives are significant barriers to effective training participation and implementation.

$H0_8$: Poor coordination and misalignment with national healthcare priorities do not significantly impact the effectiveness of training programs.

$H1_8$: Poor coordination and misalignment with national healthcare priorities significantly impact the effectiveness of training programs.

Results

A one-sample t-test was conducted to examine whether time constraints, budget limitations, and lack of incentives constitute significant barriers to effective training participation and implementation (H_7), and whether poor coordination and misalignment with national healthcare priorities significantly impact training effectiveness (H_8). The neutral midpoint was set at 3 on a 5-point Likert scale.

For the barriers related to time constraints ($M = 3.88$, $SD = 1.10$, $t(224) = 12.00$, $p < 0.001$), budget limitations ($M = 3.90$, $SD = 1.08$, $t(224) = 12.50$, $p < 0.001$), and lack of incentives ($M = 3.87$, $SD = 1.10$, $t(224) = 11.87$, $p < 0.001$), the mean scores were significantly higher than the neutral point, indicating these are perceived as significant barriers. Similarly, poor coordination between departments ($M = 3.89$, $SD = 1.08$, $t(224) = 12.36$, $p < 0.001$) and misalignment with national healthcare priorities ($M = 3.92$, $SD = 1.06$, $t(224) = 12.96$, $p < 0.001$) were also rated significantly above neutral, demonstrating their significant negative impact on training program effectiveness.

Therefore, the null hypotheses were rejected, confirming that these factors are significant barriers and impediments to effective training participation and implementation in healthcare organizations.

Table 10: Summary Table

Barrier/Challenge	Mean (M)	SD	t(224)	p-value	Interpretation
Time constraints	3.88	1.10	12.00	<0.001	Significant barrier
Budget limitations	3.90	1.08	12.50	<0.001	Significant barrier
Lack of incentives	3.87	1.10	11.87	<0.001	Significant barrier
Poor coordination between departments	3.89	1.08	12.36	<0.001	Significant impact on training
Misalignment with national healthcare priorities	3.92	1.06	12.96	<0.001	Significant impact on training

6. Strategic Need for a Structured Model

$H0_9$: There is no significant consensus among healthcare staff on the need for a national-level framework, competency-based training models, and centralized monitoring to improve training outcomes.

$H1_9$: There is significant consensus among healthcare staff on the need for a national-level framework, competency-based training models, and centralized monitoring to improve training outcomes.

Results

A one-sample t-test was conducted to assess consensus among healthcare staff regarding the need for a national-level framework, competency-based training models, and centralized monitoring to improve training outcomes. The neutral

midpoint was set at 3 on a 5-point Likert scale.

All six statements related to this topic received mean ratings significantly greater than 3, indicating strong agreement. For example, respondents agreed on the need for a national-level framework ($M = 4.13$, $SD = 0.94$, $t(224) = 17.94$, $p < 0.001$), linking training with performance appraisals and promotions ($M = 4.09$, $SD = 0.98$, $t(224) = 16.77$, $p < 0.001$), and establishing a centralized body for monitoring and evaluation ($M = 4.05$, $SD = 1.00$, $t(224) = 15.75$, $p < 0.001$). Other items such as lack of policy guidance ($M = 3.93$, $SD = 1.06$, $t(224) = 13.10$, $p < 0.001$), structured training leading to better patient outcomes ($M = 4.17$, $SD = 0.89$, $t(224) = 19.83$, $p < 0.001$), and adopting competency-based training models ($M = 4.12$, $SD = 0.92$, $t(224) = 18.36$, $p < 0.001$) were also significantly above the neutral point.

These results reject the null hypothesis, confirming a significant consensus among healthcare staff on the importance of these training improvements.

Table 11: Summary Table

Statement	Mean (M)	SD	t(224)	p-value	Interpretation
Need for a national-level framework	4.13	0.94	17.94	<0.001	Significant consensus
Training linked with performance appraisals/promotions	4.09	0.98	16.77	<0.001	Significant consensus
Centralized body to monitor and evaluate training	4.05	1.00	15.75	<0.001	Significant consensus
Lack of policy guidance on training implementation	3.93	1.06	13.10	<0.001	Significant consensus
Structured training leads to better patient care outcomes	4.17	0.89	19.83	<0.001	Significant consensus
Adoption of competency-based training models	4.12	0.92	18.36	<0.001	Significant consensus

Objectives vs. Findings Matrix

Research Objectives	Key Findings
1. To analyze existing training practices and challenges in the healthcare sector in Jordan	Training programs are regularly conducted and accessible to both clinical and administrative staff. However, significant challenges exist, including **time constraints, budget limitations, lack of incentives, poor departmental coordination, and misalignment with national healthcare priorities**, which reduce training effectiveness.
2. To identify key factors influencing the success of training implementation and assessment	Effective training outcomes are strongly linked to **needs assessment, content relevance, modern methods, and trainer competency**. Training positively impacts technical skills, confidence, teamwork, and job performance, but **systematic monitoring of outcomes is lacking,** creating gaps in evidence-based improvements.
3. To review global best practices and theoretical models relevant to healthcare training	Models such as **ADDIE, Kirkpatrick's Four Levels, and Competency-Based Training** were reviewed and adapted to Jordan's context. Global best practices stress **competency-driven, needs-based, and policy-aligned training,** which respondents also supported, confirming the relevance of adopting similar approaches in Jordan.
4. To design a conceptual model tailored to the Jordanian healthcare context for efficient training implementation and assessment	The proposed **Conceptual Model** integrates training needs assessment, curriculum design, blended delivery methods, competency-based outcomes, systematic evaluation, and feedback loops. Findings show strong consensus on the need for a **national framework, centralized monitoring, and linking training to performance appraisals and patient outcomes.**

6. CONCLUSION:

The study provides compelling evidence that healthcare staff perceive current training systems as critical yet constrained by several systemic barriers. Time limitations, budgetary restrictions, lack of incentives, and poor interdepartmental coordination were identified as significant challenges affecting participation and the overall effectiveness of training initiatives. Moreover, staff reported that misalignment with national healthcare priorities further undermines the impact of such programs.

At the same time, there is a strong consensus among respondents on the urgent need for structural reforms. Participants supported the adoption of a national-level training framework, competency-based training models, centralized monitoring mechanisms, and the integration of training outcomes with performance evaluations and patient care quality. These insights underscore the importance of shifting from fragmented and reactive training approaches to a more strategic, policy-driven, and outcome-oriented system.

Addressing these challenges and aligning training strategies with national priorities will be crucial in enhancing workforce capability, ensuring consistency in care delivery, and ultimately improving healthcare outcomes across Jordan's healthcare system.

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