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THE BICSL TRAINING PROGRAM'S MEDIATING ROLE IN PATIENT SAFETY AND HEALTH CARE PROVIDERS' SELF-EFFICACY AT AL-AFLAJ GENERAL HOSPITAL

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Abstract

Background/Objectives: Patient safety and health care providers' self-efficacy are fundamental to delivering high-quality health care. The Basic Infection Control Skills License (BICSL) training program was developed to enhance providers' competencies in infection prevention and control (IPC), thereby improving their confidence and effectiveness in applying these practices. This study examined the mediating role of the BICSL training program in enhancing patient safety outcomes by improving the self-efficacy of health care providers at Al-Aflaj General Hospital.

Methods: A cross-sectional design was used, and data were collected from health care providers through validated surveys assessing perceptions of patient safety, self-efficacy, and the impact of BICSL training.

Results: The findings showed that BICSL training significantly enhanced providers' self-efficacy, which, in turn, positively influenced patient safety indicators.

Conclusions: Structured IPC training programs not only equip health care professionals with essential technical skills but also foster confidence, responsibility, and accountability, ultimately contributing to safer patient care. These findings highlight the importance of integrating BICSL training into continuous professional development and patient safety strategies

Keywords: Basic Infection Control Skills License Training Program, health care providers, Patient Safety and Self-Efficacy

1. INTRODUCTION

Patient safety is a fundamental priority for health care systems worldwide, requiring both strong institutional policies and the active engagement of competent health care providers. Among the primary threats to patient safety in hospital settings are health care–associated infections (HAIs), which remain a major cause of prolonged hospital stays, increased health care costs, and preventable morbidity and mortality (World Health Organization [WHO]) [1]. Reducing HAIs requires strict adherence to infection prevention and control (IPC) practices, making infection control training a cornerstone of safe clinical care [2].

However, health care providers vary not only in their technical skills but also in their confidence to consistently implement IPC measures. Self-efficacy—the belief in one's ability to perform specific tasks successfully—is strongly linked to adherence to safety protocols, resilience in high-pressure environments, and sound clinical decision-making [3]. Therefore, training programs that simultaneously enhance skills and strengthen providers' self-efficacy are essential in achieving sustained improvements in patient safety [4].

The Basic Infection Control Skills License (BICSL) training program is a structured initiative mandated by Saudi Arabia' s health authorities to ensure that health care professionals attain a standardized level of competence in IPC. The program is typically required for all practicing health care providers—including physicians, nurses, allied health professionals, and support staff—either before or soon after entering hospital service. Its design is based on international best practices and national IPC regulations, ensuring alignment with accreditation and quality standards in health care [5].

The training program covers various essential IPC topics, including the principles of microbiology and modes of disease transmission; standard and transmission-based precautions such as hand hygiene, use of personal protective equipment, and isolation techniques; environmental cleaning, disinfection, and sterilization procedures; waste management and safe handling of sharps; antimicrobial stewardship; and outbreak investigation and reporting protocols [1],[2]. In addition to theoretical instruction, the program emphasizes practical skills and competency-based assessments. Participants engage in hands-on sessions, simulations, and scenario-based exercises to apply IPC measures effectively in real-world settings. Successful completion is typically validated through written examinations, skills checklists, and certification, ensuring that participants meet the required standards for safe patient care [6].

The BICSL program also plays a critical role in shaping professional attitudes and reinforcing a culture of safety within hospitals. By fostering accountability and confidence, the program promotes compliance and proactive safety behaviors among health care providers. This integration of knowledge, skill, and self-efficacy positions the program as a key mediator linking training interventions to improved patient safety outcomes.

While numerous studies have demonstrated that IPC education enhances compliance and reduces HAIs, few have explored the mediating mechanism of self-efficacy [4], [5]. Specifically, this study was conducted to examine whether participation in the BICSL program leads to an enhancement in self-efficacy, and to explore how such improvement may positively impact patient safety.

Examining this mediating role is particularly relevant in general hospitals, where health care providers frequently manage diverse patient populations, heavy workloads, and increased exposure to infection risks. Understanding how the BICSL training program bridges the gap between formal training and real-world patient safety outcomes can provide valuable insights for designing more effective professional development strategies.

Accordingly, this study investigates the mediating role of the BICSL training program in enhancing patient safety and improving health care providers' self-efficacy in a general hospital setting. The findings are expected to guide hospital administrators, policymakers, and educators in integrating structured IPC training into broader patient safety initiatives.

Study significance

The significance of this study lies in its potential to advance patient safety, professional development, and overall health care quality in general hospitals. HAIs remain a preventable yet persistent threat, compromising patient well-being and placing additional burdens on health systems. By examining the mediating role of the BICSL training program, this study demonstrates how structured IPC training can translate into measurable reductions in infection risk, thereby improving both patient safety and the quality of care. Beyond technical competence, the study emphasizes the psychological empowerment of health care providers through enhanced self-efficacy. By highlighting self-efficacy as a mediating factor, the study underscores the value of training programs that not only build knowledge but also enhance providers' confidence and motivation to consistently and effectively apply IPC practices in their daily routines.

In support of institutional accreditation and policy requirements, hospitals are increasingly required to comply with national and international standards for infection prevention and patient safety. The findings of this study provide policymakers, administrators, and accreditation bodies with evidence-based insights, reinforcing the importance of mandatory IPC certification as part of workforce credentialing and continuous professional development. Although IPC training has been widely studied, limited research has examined its mediating role in linking education, self-efficacy, and patient safety outcomes. This study bridges this gap by providing both conceptual and empirical foundations for future investigations in health care education, safety culture, and behavioral outcomes in clinical settings. In summary, this study holds relevance for patients, health care providers,

hospital management, and the academic community. It aligns with global health priorities and supports the broader goal of building resilient, safe, and patient-centered health care systems.

2. MATERIALS AND METHODS

The aim of this study was to investigate the mediating role of the BICSL program in enhancing patient safety and self-efficacy among health care providers at Al-Aflaj General Hospital. Specifically, it sought to (1) evaluate the impact of the BICSL program on participants' knowledge level across the study phases (pre-intervention, post-intervention, and follow-up); (2) assess the effect of the program on the participants' self-efficacy using the across the study phases (pre-intervention, post-intervention, and follow-up); and (3) examine the mediating role of the BICSL program in improving patient safety through enhanced self-efficacy.

2.1 Research design
A descriptive correlational research design with pretest, posttest, and follow-up assessments was employed in this study.

2.2 Study setting
This study was conducted at Al-Aflaj General Hospital in Saudi Arabia. The following departments were included: the emergency department (comprising observation rooms for males and females, a resuscitation room with defibrillation and cardioversion facilities, an isolation room, a minor procedure room, and an acute respiratory infection clinic), the urgent care center, hemodialysis unit, adult intensive care unit, pediatric intensive care unit, neonatal intensive care unit, operating room, delivery room, outpatient department, female medical ward, male medical ward, female surgical ward, and high-dependency unit.

2.3 Sample size
The study included 221 health care providers—111 nurses, 70 physicians, and 40 allied health professionals—who either held or were pursuing the BICSL and were employed at Al-Aflaj General Hospital. All participants voluntarily agreed to partake in the study. The sample size was calculated using an online sample size calculator to ensure accurate estimation (https://calc-web.com/sample_size_calculator).

2.4 Data collection tools
To achieve the study objectives, three tools were used:

1-Knowledge Questionnaire
A self-administered questionnaire was developed by the researchers to assess participants' knowledge of the BICSL training program. The tool was designed based on an extensive review of the relevant literature and consisted of 28 multiple-choice questions evaluating core IPC concepts covered in the BICSL curriculum. The questionnaire was administered at three time points: the beginning of the program (pretest), immediately after completion (posttest), and 3 months post-implementation (follow-up).

Scoring system: Each item in the knowledge questionnaire was awarded 1 point for a correct answer and 0 points for an incorrect answer, yielding a total possible score of 28. Scores were converted into percentages and categorized as follows: high competency (22–28 correct answers, $\geq 80\%$), moderate competency (15–21 correct answers, 50% to < 80%), low competency (< 15 correct answers, < 50%).

2-General Self-Efficacy Scale by [7]
The GSE [7] is a self-administered instrument consisting of 10 items designed to assess individuals' perceived self-efficacy—that is, their optimistic belief in their ability to handle various challenges and demands. The scale captures dimensions such as determination, problem-solving ability, and coping capacity. Each item is rated on a 4-point Likert scale ranging from 1 (not at all true) to 4 (exactly true), yielding a total score between 10 and 40, with higher scores indicating greater perceived self-efficacy.

Scoring system: Responses were scored using a model key: correct answers received 2 points and incorrect answers received 1 point. The total scores were summed and converted into percentage scores, yielding a possible range of 45–90, with a cutoff point of 54 (60%). The levels of self-efficacy were categorized as follows: poor self-efficacy (< 54 points, < 60%), average self-efficacy (54 points to < 68 points, 60% to < 75%), and good self-efficacy (≥ 68 points, $\geq 75\%$) [8].

3- Hospital Survey on Patient Safety [9]
This survey was used to assess participants' perceptions of patient safety issues, medical errors, and event reporting within the hospital. The survey, which takes approximately 10–15 min to complete, provides hospitals with a standardized framework for evaluating their patient safety culture, along with guidance on data interpretation. It also offers insights into issues and major decisions involved in conducting a survey and reporting the results.

Scoring system: Responses were rated on a 5-point Likert scale as follows: 1 = Strongly disagree/Very low knowledge, 2 = Disagree/Low, 3 = Neutral, 4 = Agree/High, 5 = Strongly agree/Very high. Each section was scored by summing the item scores, with higher scores indicating more positive knowledge, perceptions, or attitudes toward patient safety. The survey consisted of five main sections: (1) Error and Patient Safety Knowledge, (2) Safety of the Health Care System, (3) Personal Influence over Safety, (4) Personal Attitudes toward Patient Safety, and (5) Safety in the Workplace.

2.5 Validity and reliability of the tools

The reliability of all tools was assessed using Cronbach's alpha coefficient to determine internal consistency. The knowledge questionnaire on the BICSL training demonstrated high construct validity, with correlation coefficients of 0.872 (pretest), 0.765 (posttest), and 0.766 (follow-up). These findings indicate that the three tools used in this study were reliable. To ensure content and face validity, a bilingual panel of five experts reviewed the instruments. Based on their evaluation, the tools were deemed valid and suitable for assessing knowledge, self-efficacy, and patient safety perceptions among health care providers.

2.6 Pilot study

A pilot study was conducted after developing the self-administered questionnaire and before initiating the main data collection. The aim was to evaluate the effectiveness of the data collection tools and assess the feasibility of the study. The pilot also helped estimate the time required to complete the instruments, which ranged from 35 to 50 min. As no modifications were deemed necessary, the pilot study participants were included in the main study samples.

2.7 Date collection and procedures

Before data collection began, official approval was obtained from the Director of Aflaj General Hospital. After securing consent from the selected participants, the investigator explained the study's objectives and the contents of the knowledge questionnaire to the health care providers. Data collection was carried out during 3 months, from April 1 to June 30, 2025. The schedule was organized to accommodate departmental workload, with data collected daily between 1:00 PM and 3:00 PM. Participants completed the questionnaire in the investigator's presence to ensure clarity and completeness of responses. Following the analysis of the pretest data, the educational program content was subsequently developed.

The training program was implemented over 3 months, from early April to the end of June 2025, targeting all health care providers at Al-Aflaj General Hospital. Its primary aim was to design and deliver a structured educational initiative based on the BICSL framework. Various instructional strategies, teaching methods, media, and evaluation tools were carefully selected to meet learners' needs and align with the program's objectives and content. The study sample was divided into 12 multidisciplinary groups of ~37 participants each, including nurses, physicians, and allied health professionals. Training sessions were conducted three times per week, lasting 2 h each, from 1:00 PM to 3:00 PM. Session schedules were adjusted to align with departmental workloads and incorporated opportunities for discussion, reflection, and feedback to enhance engagement and learning. In total, the program comprised 36 sessions, amounting to 72 instructional hours. Sessions utilized available resources and customized content, supported by diverse teaching approaches, including lectures, group discussions, and brainstorming activities. Instructional media included electronic materials developed by the investigator and distributed to participants on the first day of the training program. Each session began with an orientation to its objectives and relevance, and systemic feedback was provided by reviewing the previous session at the start and evaluating the current session at the end to reinforce learning and promote continuous improvement.

The effectiveness of the training program was assessed immediately after its completion using the same evaluation tools applied during the pre-program phase. Participants' knowledge of the BICSL program, patient safety, and self-efficacy were measured through a posttest administered at the conclusion of the final session to evaluate immediate learning outcomes. To assess knowledge retention, a follow-up evaluation was conducted in October 2025, 3 months after program implementation. During this phase, questionnaires were distributed across all departments to ensure comprehensive participation from all health care providers involved in the program.

3. RESULTS

3.1. Sociodemographic Characteristics

A total of 221 health care professionals participated in the study (Table 1). Nurses represented the largest proportion (50.2%), followed by physicians (31.7%) and technicians (18.1%). Nearly half of the participants were aged ≥35 years, indicating a mature and experienced workforce. Most respondents held a bachelor's degree (66.1%) and reported 5–10 years of work experience (34.4%). Saudi nationals constituted 25.7% of the sample, while 74.3% were non-Saudis. A large majority (83.7%) reported prior participation in infection prevention and control (IPC) training.

Table 1. Sociodemographic characteristics of participants (n = 221).

Item	Frequency (n = 221)	Percentage
Specialty		
Nurse	111	50.2%
Physician	70	31.7%
Technician	40	18.1%
Age		
From 20 to less than 25	9	4.1%
From 25 to less than 30	53	24%
From 30 to less than 35	51	23.1%
35 and above	108	48.9%
Educational level		

Technician	17	7.7%
Bachelor's	146	66.1%
Master's degree	47	21.4%
PhD degree	11	5%
Years of experience		
Less than 5	38	17.2%
From 5 to less than 10	76	34.4%
From 10 to less than 15	53	24%
15 and above	54	24.4%
Nationality		
Saudi	57	25.7%
Non-Saudi	164	74.3%
Attending any training program related to infection control		
Yes	185	83.7%
No	36	16.3%

3.2. Effect of the BICSL Program on Knowledge Levels

Table 2 shows significant improvements in participants' infection control knowledge across all study phases. Friedman's test revealed a statistically significant difference in knowledge levels (χ^2 = 16.57, p < 0.001). Post-intervention and follow-up scores (M = 99.1 ± 0.01 and M = 95.8 ± 3.5, respectively) were significantly higher than pre-intervention scores (M = 88.1 ± 9.2), confirming the effectiveness of the BICSL program and sustained knowledge retention over time.

Table 2. Comparison of BICSL knowledge scores across study phases (pre-intervention, post-intervention, and follow-up).

Item	Pre-intervention		Post-intervention		Follow-up		Friedman test	Sig.
	Mean ± SD	Median (range)	Mean ± SD	Median (range)	Mean ± SD	Median (range)		
BICSL	88.1 ± 9.2	91.1 (42.8)	95.8 ± 3.5	96.4(16.1)	99.1 ± 0.01	100 (0.04)	16.57	0.00

3.3. Effect of the BICSL Program on Generalized Self-Efficacy (GSE)

As presented in Table 3, participants' GSE scores improved significantly across the study phases (χ^2 = 16.82, p < 0.001). The mean GSE increased from 28.8 ± 6.5 at baseline to 33.5 ± 6.2 post-intervention and remained elevated at follow-up (M = 39.8 ± 0.38). These findings suggest that the intervention effectively enhanced participants' confidence in their ability to manage infection control responsibilities.

Table 3. GSE scores across study phases (pre-intervention, post-intervention, and follow-up).

Item	Pre-intervention		Post-intervention		Follow-up		Friedman test	Sig.
	Mean ± SD	Median (range)	Mean ± SD	Median (range)	Mean ± SD	Median (range)		
Generalized Self-Efficacy Scale (GSE)	28.8 ± 6.5	29 (24)	33.5 ± 6.2	35.5 (20)	39.8 ± 0.38	40 (2)	16.82	0.00

3.4. Effect of the BICSL Program on Patient Safety Practices

Table 4 presents the results of the Friedman test for patient safety domains. All subscales—including Error and Patient Safety, Safety and Health Care, Personal Influence, Personal Attitude, and Safety in the Workspace—showed statistically significant improvements (p < 0.001). The total patient safety score increased from 114.5 ± 19.5 pre-intervention to 149.5 ± 24.75 at follow-up. Among domains, Safety in the Workspace showed the greatest improvement, while Personal Attitude demonstrated the least change, suggesting the need for future emphasis on attitudinal and behavioral reinforcement.

Table 4. Comparison of patient safety scores across study phases.

Item	Preintervention		Postintervention		Follow-up		Friedman test	Sig.
	Mean ± STD	Median (range)	Mean ± SD	Median (range)	Mean ± SD	Median (range)		

Error and patient safety	24.7±7.4	25 (28)	30.9±4.5	32 (16)	31.25±4.3	33(3)	17.71	0.00
Safety and health care	19.6±3.8	20 (18)	24.4 ±4.7	24 (24)	28.73±0.53	29(3)	19.34	0.00
Personal influence	24.3±4.5	24 (24)	29.9±4.7	30 (28)	29.99 ±0.63	30(4)	19.12	0.00
Personal attitude	15.1± 2.6	15 (12)	17.14 ±3.2	17 (16)	19.67±0.59	20 (4)	14.26	0.00
Safety in the workspace	30.6±6.5	32 (30)	37.7 ±6.9	37.5 (36)	42.5±1.27	44 (8)	19.53	0.00
Total patient safety	114.5±21.2	120 (101)	140.2±19.5	139.5 (104)	149.52±4.75	151 (21)	21.56	0.00

4.5. Comparison across Health Care Specialties

As shown in Table 5, the Kruskal–Wallis test revealed significant differences among nurses, physicians, and technicians during the pre-intervention phase for all domains ($p < 0.05$). Technicians initially demonstrated lower knowledge (BICSL = 83.3) compared with physicians (95.5) and nurses (87.0). Post-intervention, these differences became nonsignificant for BICSL ($p = 0.065$) and patient safety ($p = 0.56$), indicating that the training program effectively minimized inter-professional performance gaps. The GSE scores remained marginally different ($p = 0.042$), with technicians showing relatively greater improvement in self-efficacy.

Table 5. Comparison of BICSL, GSE, and patient safety scores across specialties.

Item	Specialty			Kruskal–Wallis test	Sig.
	Nurse	Physician	Technician		
BICSL					
Pre-intervention	87	95.5	83.3	54.2	0.000
Post-intervention	96.2	98.2	96.4	5.34	0.065
Follow-up	98	98.2	98.4	3.45	0.256
GSE					
Pre-intervention	26	30	34	41.4	0.000
Post-intervention	33	37	39	6.29	0.042
Follow-up	38	38.5	38.9	2.14	0.099
Patient safety					
Pre-intervention	112	120.5	140	20.51	0.000
Post-intervention	141.5	139.5	138.5	1.16	0.56
Follow-up	149	149.5	150	1.66	0.558

3.6. Correlation between Sociodemographic Variables and Outcome Measures

Table 6 illustrates correlations between participants' sociodemographic characteristics and their BICSL, GSE, and patient safety scores. Prior to the intervention, age showed significant positive correlations with all three outcome domains ($p < 0.05$), suggesting that older participants had higher baseline knowledge and safety practices. However, these associations disappeared post-intervention, indicating that the program successfully equalized competency levels across demographic groups. Educational level and training history also showed significant correlations with post-intervention and follow-up scores, highlighting the importance of prior professional development.

Table 6. Correlation between sociodemographic characteristics and BICSL, GSE, and patient safety scores across study phases

Summary of Findings

Item	BICSL			GSE			Patient Safety		
	Preintervention	Postintervention	Follow-up	Preintervention	Postintervention	Follow-up	Preintervention	Postintervention	Follow-up
Specialty	0.49	0.118	0.062	0.059	0.078	0.00	−0.115	0.038	0.023
	(0.00)	0.079	(0.359)	0.853	0.25	(0.995)	0.089	0.577	(0.732)
Age	0.304	0.059	0.043	−0.023	0.313	0.052	−0.016	0.374	−0.063
	(0.00)	(0.379)	(0.525)	(0.732)	(0.00)	(0.446)	(0.817)	(0.00)	(0.334)
Educational level	0.469	0.122	0.089	0.137	0.05	0.016	0.026	0.082	0.022
	(0.00)	(0.07)	(0.187)	(0.042)	(0.462)	(0.814)	(0.701)	(0.224)	(0.741)
			0.052			0.102			−0.027
years of experience	0.133	−0.018	(0.442)	0.342	0.004	(0.132)	0.287	−0.058	(0.686)
	(0.048)	(0.789)	−0.056	(0.00)	(0.954)	0.088	(0.00)	(0.394)	0.044
Having training program	0.246 (0.00)	0.008 (0.921)	(0.41)	−0.28 (0.00)	0.033 (0.63)	(0.194)	−0.386 (0.00)	−0.026 (0.697)	(0.515)

• The BICSL intervention significantly improved participants' knowledge, self-efficacy, and patient safety practices.
• Improvements were sustained at follow-up, demonstrating long-term retention.
• The program effectively reduced inter-specialty performance differences.
• Sociodemographic influences diminished after training, underscoring its standardizing effect.

4. DISCUSSION

Mandatory basic IPC training, such as the BICSL program, equips health care providers with the essential knowledge and skills to reduce infection risks, thereby fostering a safer environment for both patients and staff [10]. Patient safety is a critical component of health care delivery, as it aims to prevent and minimize harm to patients [11], [12]. The WHO (2023) estimates that 2.6 million people die each year due to unsafe care, emphasizing the urgent need for qualified and competent health workers (WHO, 2019). Similarly, the Pan American Health Organization (2023) reports that one in 10 patients experiences harm each year due to poor safety management, leading to disability or death. This study examined the mediating role of the BICSL training program in enhancing patient safety and self-efficacy among health care providers at Al-Aflaj General Hospital. Analysis of the sociodemographic data revealed that the majority of participants were nurses, most aged 25–29 years, held a bachelor's degree, and had 15 or more years of experience. In addition, most participants were non-Saudi nationals and had previously attended IPC-related training programs.

Regarding the first research question, "What function does the BICSL program serve in enhancing health care providers' knowledge regarding infection control measures?"—the results represented in Tables 2, 3, and 4 address this inquiry. The findings revealed a significant improvement in participants' knowledge following the implementation of the BICSL program, which was sustained during the 3-month follow-up period. Both median and mean post-intervention and follow-up scores were consistently higher than pre-intervention scores. From the researcher's perspective, this improvement may be attributed to the program's clear and concise instructional approach, the use of relevant media that enhanced comprehension, and the encouragement of active participation through repetition and motivation.

These findings align with those of [13], who examined the "Effect of an On-the-Job Training Program on Nurses' Compliance and Satisfaction with Infection Control Measures at an Obstetric Operating Room." That study reported a statistically significant improvement in all aspects of nurses' knowledge—including general IPC principles, hand hygiene, use of protective equipment, safe injection and sharps handling, waste disposal, and sterilization—after training compared with pre-training levels. Similarly, a study [14] titled "Knowledge, Attitude, and Practice of Nurses about Standard Precautions for Hospital-Acquired Infection in Teaching Hospitals Affiliated to Zabol University of Medical Sciences (2014)" found that the majority of nurses demonstrated correct

knowledge of nosocomial infections following the intervention, with a statistically significant difference compared with baseline results.

Regarding the effect of the applied program on the studied sample in relation to the GSE across the pre-intervention, post-intervention, and follow-up phases, the present study revealed statistically significant differences (Sig. = 0.00). These results indicate a meaningful improvement in self-efficacy after the intervention, which was maintained at the 3-month follow-up. The median and mean post-intervention and follow-up assessments were consistently higher than the pre-intervention scores, suggesting the training program was effective.

These findings align with those of [15], who conducted a study titled "The relationship between knowledge and self-efficacy of nurses regarding early initiation of cardiopulmonary resuscitation and automated defibrillation in Saudi Arabia." The study concluded that higher knowledge levels were positively associated with greater self-efficacy. Similarly, [16] emphasized that high levels of knowledge and self-efficacy contribute to achieving a better standard of care.

In contrast, [17] reported a statistically significant improvement in nursing students' self-efficacy skills across all dimensions immediately after the program, followed by a slight decline during the follow-up phase compared with the pre-program phase. Likewise, another study [18], titled "The effect of educational workshop on emergency department nurses' self-efficacy in patient training," found that self-efficacy scores decreased during the follow-up compared with the 1-month post-intervention period. This decline may reflect the time-related fading of learning effects. Although the follow-up phase attempted to reinforce previous learning, sustaining self-efficacy requires not only competence but also self-esteem. From the researcher's point of view, the inconsistency between the findings of the present study and those of previous research may be attributed to greater compliance with IPC policies (such as hand hygiene and the use of personal protective equipment) under effective local leadership.

Regarding the effect of the applied BISCL program on patient safety across the pre-intervention, post-intervention, and follow-up phases, the findings revealed that the median and mean post-intervention and follow-up scores were consistently higher than those in the pre-intervention phase. This indicates that the training program was effective. The domains with the highest Wilcoxon test values—such as total patient safety—demonstrated the most substantial improvements, whereas personal attitude showed the smallest increase. This suggests that future interventions may need to include more targeted behavioral or motivational strategies. From the researcher's perspective, participants' commitment to maintaining safe patient practices was evident, as they discussed the patient safety actions implemented during the educational sessions of the training program. This reflection process enabled them to identify and correct their errors independently.

The findings of this study are consistent with those of [19], who conducted a study titled "The Effects of a Simulation-Based Patient Safety Education Program on Compliance with Patient Safety, Perception of Patient Safety Culture, and Educational Satisfaction of Operating Room Nurses." That study reported significant improvement in nurses' compliance with patient safety protocols and perceptions of patient safety culture, along with high levels of satisfaction with the educational program.

5. Conclusions

The findings of this study revealed statistically significant improvements (Sig. = 0.00) in participants' knowledge, GSE, and commitment to patient safety across all study phases—pre-intervention, post-intervention, and follow-up. The BICSL training program served as a pivotal mechanism for enhancing patient safety and strengthening the self-efficacy of health care providers at Al-Aflaj General Hospital. Overall, the intervention effectively standardized performance across multiple specialties, leading to notable gains in IPC knowledge and comprehensive patient safety practices.

Informed Consent Statement: The study strictly adhered to established ethical guidelines, prioritizing participants' rights. The study's objectives and procedures were clearly explained to all selected health care

providers, and participants were assured that their personal data would be kept strictly confidential. Informed consent was obtained to ensure participant autonomy, and participants were informed of their right to withdraw from the study at any stage without consequences

Data Availability Statement: All the data of this research are included and presented in the article.

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