

## EXPLORING THE INFLUENCE OF THE QSEN MODEL ON PATIENT SAFETY: INSIGHTS FROM HOSPITALS IN SOUTHEAST SULAWESI, INDONESIA

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### ABSTRACT

**Introduction:** Nurses are vital in ensuring patient safety, yet many in developing regions like Southeast Sulawesi lack the necessary training to meet community healthcare needs. This study addresses the gap in nursing competence through the Quality and Safety Education for Nurses (QSEN) initiative, which emphasizes quality and safety in nursing education. **Aim:** This research aims to evaluate the impact of QSEN training on patient safety among nurses in a regional hospital in Southeast Sulawesi, comparing outcomes before and after the intervention. **Methods:** A quasi-experimental design with pre-test and post-test measures was utilized, involving 580 nurses from Bahramis Hospital. Participants were divided into intervention and control groups. Data analysis included univariate and bivariate assessments to evaluate changes in knowledge, skill, and attitude related to patient safety. **Results:** Post-intervention, the intervention group exhibited significant improvements in knowledge ( $p=0.000$ ) and skill dimensions compared to the control group. Attitude towards patient safety also showed positive shifts. Despite challenges like high patient-to-nurse ratios, the QSEN model effectively enhanced competencies among participants. **Conclusion:** Implementing the QSEN model significantly improved nurses' knowledge, skills, and attitudes towards patient safety in Southeast Sulawesi. The findings underscore the importance of ongoing training and institutional support in fostering a culture of safety within healthcare settings. Investing in QSEN education can lead to better patient outcomes and a more resilient healthcare system. Future research should examine the long-term effects of QSEN on clinical practices and patient safety outcomes.

### INTRODUCTION

Nurses play a pivotal role in ensuring patient safety. They are often the primary point of contact for patients, and their competence significantly impacts patient care and satisfaction (1). The quality of nursing education is foundational in developing competent healthcare workers equipped with the necessary knowledge, attitudes, and skills. However, many nurses may not be adequately prepared to meet the diverse needs of their communities, particularly in developing regions like

Southeast Sulawesi (2). A study conducted in a regional public hospital in Indonesia revealed that 70% of patients reported dissatisfaction with nursing services (3). This finding highlights a significant gap in service quality, reflecting the challenges faced by nurses in meeting community expectations for high-quality healthcare. The demands for excellent service, coupled with established performance standards, necessitate that nurses demonstrate their professional contributions to improving overall healthcare quality (4).

The Quality and Safety Education for Nurses (QSEN) initiative was developed to address the pressing need for improved nursing competencies related to quality and safety. It was established in response to funding from the Robert Wood Johnson Foundation and the collaborative efforts of the National Nursing Advisory Board and the American Association of Colleges of Nursing (AACN). These competencies provide a structured approach to nursing education, emphasizing the integration of quality and safety into nursing practice. Active learning models, such as simulations and case studies, are integral to QSEN training, allowing nurses to practice and evaluate their skills in a supportive environment. Research indicates that QSEN not only enhances the knowledge and skills of nurses but also fosters a mindset conducive to prioritizing patient (5).

Implementing the QSEN model in provincial hospitals in Southeast Sulawesi presents both challenges and opportunities. The region's healthcare system is often under-resourced, and nurses may face barriers in accessing the necessary training and educational resources. Nevertheless, the integration of QSEN competencies can significantly enhance nursing practice, ultimately leading to improved patient outcomes. One of the critical areas where QSEN can make a difference is in fostering teamwork and collaboration among healthcare providers. Effective communication and cooperation among healthcare professionals are essential for patient safety. By emphasizing teamwork, the QSEN model can help break down silos between disciplines, ensuring a more holistic approach to patient care (6).

Moreover, the focus on evidence-based practice within the QSEN framework encourages nurses to utilize the best available research in their clinical decision-making. This approach not only improves the quality of care but also instills a culture of continuous learning and improvement within the healthcare setting. Despite the potential benefits of QSEN, several challenges persist in the implementation of its principles. Many nurses in Southeast Sulawesi report feeling overwhelmed by their responsibilities, often due to high patient-to-nurse ratios and inadequate staffing levels. These conditions can hinder the ability of nurses to provide safe and effective care, potentially leading to burnout and decreased job satisfaction.

Furthermore, the integration of new educational frameworks like QSEN requires institutional commitment and support. Hospitals must invest in ongoing training programs and resources that empower nurses to embrace the competencies outlined in the QSEN model. Leadership within healthcare institutions plays a crucial role in fostering an environment conducive to patient safety (7). The research aims to determine the patient safety before and after the orientation of the Quality Education and Safety for Nurse (QSEN) in the treatment and control group of Southeast Sulawesi Hospital, Indonesia.

## METHODOLOGY

### Research design

This study will use a quasi-experimental study pre-test-post test method with a control group. This Study design is an empirical interventional study to estimate the causal impact of an intervention on the target population without random assignment.

## Research Setting

Bahteramas was chosen as the location of the research because it is the largest and referral center hospital in Kendari, Southeast Sulawesi of Indonesia. This research was carried out in 2023.

## Population and Sampling

The population in this study is 1057 nurses are working in Hospital. The sample size in nurses was 580 nurses, calculated using the Cochran's formula. The samples were drawn using the simple random sampling technique to divide the sample into two groups, intervention and control groups.

## Data analysis

Univariate analysis is the approach by which data is evaluated using one variable. A bivariate analysis constitutes the process of estimating the relationship or correlation or calculating the interaction of two variables. A comparison of pretest scores between the treatment and control group for variables was performed using Wilcoxon for independent samples.

## RESULTS AND DISCUSSION

### Construct The Quality and Safety Education for Nurses (QSEN)

The Quality and Safety Education for Nurses (QSEN) application is designed to facilitate nurses in performing their duties to provide healthcare services to patients. This application contains modules that can serve as guidelines for nurses. The application includes modules Patient Safety.

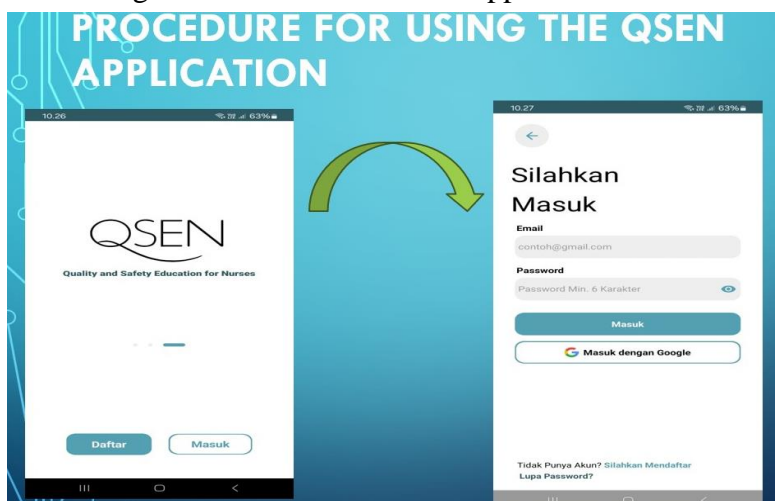


Figure 1. Main Screen Display of the QSEN Application

The following are the instructions for using the QSEN application, first download the application from the Playstore. Install the application and create an account to log in. After creating an account, please log in using your account. After that, please select "Modules" to view the available menu. After selecting a module, the nurse can choose the specific module they wish to view.

## Respondent Characteristics

Table 1. Frequency Distribution Based on Age Category of Health Workers

Age Category (Years Old)	Workplace			
	Intervention		Control	
	Frequency	%	Frequency	%
24-30	60	20,7	65	22,4
31-37	146	50,3	165	56,9

<b>38-44</b>	63	21,7	50	17,2
<b>45-51</b>	18	6,2	7	2,4
<b>52-58</b>	3	1,0	3	1,0
<b>Total</b>	<b>290</b>	<b>100</b>	<b>290</b>	<b>100</b>

Table 1. shows that age consists of 5 categories, namely 24-30 years, 31-37 years, 38-44 years, 45-51 years, and 52-58 years. The largest number of respondents at Bahteramas Hospital were in the 31-37 years age category, amounting to 146 respondents (50,3%). Likewise, at the Kendari City General Hospital, the largest number of respondents in the same age category was 165 respondents (56,9%).

Table 2. Frequency Distribution Based on Gender of Health

<b>Gender</b>	<b>Workplace</b>			
	<b>Intervention</b>		<b>Control</b>	
	<b>Frequency</b>	<b>%</b>	<b>Frequency</b>	<b>%</b>
<b>Male</b>	70	24,1	64	22,1
<b>Female</b>	220	75,9	226	77,9
<b>Total</b>	<b>290</b>	<b>100</b>	<b>290</b>	<b>100</b>

Table 2. shows that the gender of the majority of respondents at both Bahteramas Hospital and Kendari City General Hospital is both female, 220 respondents (75.9%) and 226 respondents (77.9%) respectively compared to male respondents.

Table 3. Frequency Distribution Based on Education Category of Health Workers

<b>Education</b>	<b>Workplace</b>			
	<b>Intervention</b>		<b>Control</b>	
	<b>Frequency</b>	<b>%</b>	<b>Frequency</b>	<b>%</b>
Nurse Associate	71	24,5	111	38,3
Nurse Profession	198	68,3	121	41,7
Bachelor of Nursing	21	7,2	58	20
<b>Total</b>	<b>290</b>	<b>100</b>	<b>290</b>	<b>100</b>

Table 3. shows that the majority of respondent's education at Bahteramas Hospital and Kendari City General Hospital is nursing profession (Ners), namely 198 respondents (68,3%) and 121 respondents (41,7%).

Table 4. Frequency Distribution Based on Employment Status of Health Workers

<b>Employment Status</b>	<b>Workplace</b>			
	<b>Intervention</b>		<b>Control</b>	
	<b>Frequency</b>	<b>%</b>	<b>Frequency</b>	<b>%</b>
Permanent Employee	165	56,9	100	34,5
Contract	114	39,3	162	55,9
Apprenticeship	11	3,8	28	9,7
<b>Total</b>	<b>290</b>	<b>100</b>	<b>290</b>	<b>100</b>

Table 4. shows that the largest number of respondents at Bahteramas Hospital were permanent employee, amounting to 165 respondents (56,9%). Meanwhile, at the Kendari City General

Hospital, the largest number of respondents were contract status, amounting to 162 respondents (55,9%).

## Univariate Analysis

Table 5. Frequency Distribution Based on Knowledge, Skill, and Attitude of Patient Safety

Category of Safety		Workplace							
		Sufficient				Insufficient			
		Intervention		Control		Intervention		Control	
		n	%	n	%	N	%	n	%
Knowledge	Pre Test	168	57,9	112	38,6	122	42,1	178	61,4
	Post Test	168	57,9	112	38,6	122	42,1	178	61,4
Skill	Pre Test	185	63,8	231	79,7	105	36,2	59	20,3
	Post Test	188	64,8	232	80,0	102	35,2	58	20,0
Attitude	Pre Test	128	44,1	205	70,7	162	55,9	85	29,3
	Post Test	128	44,1	205	70,7	162	55,9	85	29,3
Total		<b>290</b>	<b>100</b>	<b>290</b>	<b>100</b>	<b>290</b>	<b>100</b>	<b>290</b>	<b>100</b>

Table 5 The table presents a frequency distribution analysis of knowledge, skill, and attitude regarding patient safety across two workplace categories: Intervention and Control. In the Knowledge category, both the pre-test and post-test results show that a higher percentage of participants in the Intervention group (57.9%) had sufficient knowledge compared to the Control group (38.6%). Conversely, a greater percentage of the Control group (61.4%) was classified as insufficient. For Skills, the pre-test indicated that 63.8% of the Intervention group had sufficient skills, while the Control group had a significantly higher percentage of 79.7%. The post-test results reflect a slight improvement in both groups, with 64.8% in Intervention and 80.0% in Control demonstrating sufficient skills. In terms of Attitude, pre-test results reveal that only 44.1% of the Intervention group exhibited a sufficient attitude, compared to 70.7% in the Control group. This distribution remained unchanged in the post-test for both groups.

Overall, the data illustrates the differences in knowledge, skill, and attitude towards patient safety, with the Control group consistently showing higher percentages in most categories. The total number of participants in each category remained constant at 290, representing the entire sample size.

## Bivariate Analysis

Table 6. Normality Test Result in Safety on Health Workers Before and After Intervention

Dimentions		Intervention		Control	
		p-value	A	p-value	$\alpha$
Knowledge	Pretest	0,000	0,05	0,000	0,05
	Posttest	0,000	0,05	0,000	0,05
Skill	Pretest	0,000	0,05	0,000	0,05
	Posttest	0,000	0,05	0,000	0,05
Attitude	Pretest	0,000	0,05	0,000	0,05
	Posttest	0,000	0,05	0,000	0,05

Based on the normality test table One Sample Kolmogorov Smirnov Test shows that the significance (p) for research subjects the value before and after intervention is smaller than the significance of 0.05 which means the data are not normally distributed.

Table 7. The Difference of Dimentions of Safety Before and After Intervention on Health Workers in Bahteramas Hospital

Dimentions		Intervention			Control		
		Mean rank	SD	<i>p</i>	Mean rank	SD	<i>P</i>
Knowledge	Pretest	21.0759	1.73537	0.000	26.99	3.635	0.011
	Prosttest	32.8241	2.57216		27.04	3.630	
Skill	Pretest	12.0897	1.17598	0.000	16.08	1.480	0.054
	Prosttest	17.4172	1.83442		16.11	1.479	
Attitude	Pretest	12.0448	1.27039	0.000	18.41	2.119	0.068
	Prosttest	17.1345	2.14343		18.46	2.106	

Table 7 illustrates the differences in safety dimensions knowledge, skill, and attitude before and after an intervention among health workers at Bahteramas Hospital, comparing the results from both the Intervention and Control groups. In the Knowledge dimension, the pretest results show a mean rank of 21.0759 for the Intervention group with a standard deviation (SD) of 1.73537, indicating a statistically significant difference ( $p = 0.000$ ). The Control group had a higher mean rank of 26.99 and an SD of 3.635, also significant ( $p = 0.011$ ). After the intervention, the mean rank for the Intervention group increased to 32.8241 ( $SD = 2.57216$ ), while the Control group remained relatively stable at 27.04 ( $SD = 3.630$ ).

In the Skill dimension, the pretest mean rank for the Intervention group was 12.0897 ( $SD = 1.17598$ ), again showing a significant difference ( $p = 0.000$ ), while the Control group had a mean rank of 16.08 ( $SD = 1.480$ ) with a  $p$ -value of 0.054, which is not statistically significant. Post-intervention, the Intervention group's mean rank rose to 17.4172 ( $SD = 1.83442$ ), while the Control group remained at 16.11 ( $SD = 1.479$ ). For the Attitude dimension, the pretest results indicate a mean rank of 12.0448 ( $SD = 1.27039$ ) for the Intervention group, with a significant  $p$ -value of 0.000, whereas the Control group had a mean rank of 18.41 ( $SD = 2.119$ ) with a  $p$ -value of 0.068, suggesting a marginal difference. After the intervention, the Intervention group's mean rank improved to 17.1345 ( $SD = 2.14343$ ), while the Control group's mean rank slightly increased to 18.46 ( $SD = 2.106$ ). Overall, these findings indicate that the intervention significantly enhanced the dimensions of knowledge, skill, and attitude among health workers in the Intervention group compared to the Control group.

## Discussion

The implementation of the Quality and Safety Education for Nurses (QSEN) model represents a significant step forward in enhancing patient safety across healthcare settings. This study, conducted in hospitals in Southeast Sulawesi, Indonesia, provides valuable insights into the influence of the QSEN model on key dimensions of patient safety: knowledge, skill, and attitude among healthcare workers. The findings underscore the model's effectiveness in fostering a culture of safety and improving patient outcomes (8). The QSEN initiative aims to prepare nurses with the knowledge, skills, and attitudes necessary to improve the quality and safety of healthcare systems. It emphasizes six core competencies: patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics. By integrating these competencies into nursing education and practice, the QSEN model seeks to address the complexities of modern healthcare and the growing emphasis on patient safety (9).

The results from the hospitals in Southeast Sulawesi reveal significant improvements in the dimensions of knowledge, skill, and attitude regarding patient safety among healthcare workers following the implementation of the QSEN model. The data show a notable increase in the

knowledge dimension post-intervention. Before the implementation of the QSEN model, healthcare workers exhibited varying levels of understanding regarding patient safety protocols. The mean rank for knowledge increased significantly after the intervention, indicating that participants gained essential information and skills necessary for enhancing patient safety (10). This improvement can be attributed to the structured training programs based on the QSEN competencies. Such training not only provided theoretical knowledge but also practical applications relevant to the local healthcare context. The emphasis on evidence-based practices allowed healthcare workers to understand the rationale behind safety protocols, thereby increasing their confidence in applying this knowledge in real-world situations (6)

The findings related to the skill dimension are equally compelling. Post-intervention assessments demonstrated that healthcare workers displayed improved practical skills necessary for ensuring patient safety. The QSEN model emphasizes the importance of hands-on training and simulation exercises, which are critical in fostering the skills needed to navigate complex patient care scenarios (11). The increase in skill levels highlights the effectiveness of experiential learning methods. These methods provide healthcare workers with opportunities to practice skills in a controlled environment, reducing the likelihood of errors in actual clinical settings. As healthcare becomes increasingly complex, the ability to perform skills effectively and safely is paramount. The results from this study suggest that the QSEN model successfully equipped healthcare workers with the competencies necessary to enhance patient safety. The attitude dimension also showed significant improvement following the QSEN intervention. Healthcare workers reported a more positive attitude towards patient safety, which is crucial for fostering a culture of safety within healthcare organizations. The QSEN model promotes an understanding of the importance of safety in patient care, encouraging healthcare workers to adopt proactive approaches to identifying and mitigating risks (5).

The shift in attitude can be linked to increased awareness and understanding of the implications of safety protocols. When healthcare workers recognize the importance of their roles in ensuring patient safety, they are more likely to engage in practices that prioritize patient well-being. This cultural shift is essential for creating an environment where safety is a shared responsibility among all staff members. The implications of these findings are significant for healthcare organizations in Southeast Sulawesi and beyond. The successful implementation of the QSEN model suggests that targeted educational interventions can lead to meaningful improvements in patient safety. By enhancing knowledge, skill, and attitude, healthcare workers become better equipped to manage patient care effectively (12).

Moreover, the findings emphasize the need for ongoing training and support. Patient safety is not a one-time initiative but rather a continuous commitment to improving healthcare practices. Organizations must foster an environment that encourages lifelong learning and professional development. This can be achieved through regular training sessions, workshops, and access to resources that support the ongoing education of healthcare workers. Additionally, the results highlight the importance of leadership in promoting a culture of safety. Healthcare leaders play a critical role in establishing policies and practices that prioritize patient safety. By actively supporting the QSEN model and its associated competencies, leaders can inspire healthcare workers to embrace safety as a core value in their practice (8). While the findings from this study are promising, it is essential to acknowledge potential challenges in implementing the QSEN model in healthcare settings. One challenge may be the resistance to change among staff. Healthcare workers accustomed to traditional practices may be hesitant to adopt new approaches. To address this, organizations should emphasize the benefits of the QSEN model and involve staff in the development and implementation of training programs. Another consideration is the need for adequate resources. Implementing the QSEN model requires investment in training materials,

simulation equipment, and ongoing support for healthcare workers. Organizations must allocate sufficient resources to ensure the sustainability of patient safety initiatives (13).

Future research should explore the long-term impact of the QSEN model on patient safety outcomes. While this study demonstrates improvements in knowledge, skill, and attitude, further investigation is needed to assess how these changes translate into actual patient care practices and outcomes. Longitudinal studies could provide insights into the sustained effects of the QSEN model and its potential for reducing adverse events in healthcare settings. Additionally, expanding the scope of research to include diverse healthcare settings and populations could enhance the generalizability of the findings. Understanding how the QSEN model functions in various contexts will provide valuable information for tailoring interventions to meet the specific needs of different healthcare environments (14).

## CONCLUSION

The study highlights the positive influence of the QSEN model on patient safety in hospitals across Southeast Sulawesi, Indonesia. The significant improvements in knowledge, skill, and attitude among healthcare workers underscore the model's effectiveness in fostering a culture of safety. As healthcare continues to evolve, the integration of QSEN competencies into nursing education and practice will be essential in preparing health workers to meet the challenges of providing safe, high-quality patient care. By investing in education and training based on the QSEN model, healthcare organizations can enhance patient safety, ultimately leading to better health outcomes and a more resilient healthcare system.

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