ORIGINAL RESEARCH

Perception of Health Teams on the Implementation of Strategies to Decrease Nursing Errors and Enhance Patient Safety

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Background: Patient care is a public health issue all over the world, with nursing errors in hospitals being a significant source of harm to patients and a hindrance to the healthcare system's efficiency.

Purpose: The purpose of this study was to investigate health teams' perceptions of strategies used to reduce nursing error that affects patient safety.

Patients and Methods: A descriptive study was conducted from January to March 2022 at Najran University Hospital and KKH to better understand the issue. The study included 400 healthcare team members, including nurses, physicians, nurse aides, health workers, and others. The data was collected through the analysis of the health team's characteristics, nursing errors, and strategies for error reduction.

Results: The results of the study led to the development of five strategies and 28 interventions aimed at reducing nursing errors. The study revealed that two-thirds of the participants had a high perception of strategies for reducing nursing errors, while one-third had a low perception.

Conclusion: The study highlights the importance of addressing nursing errors in the healthcare system and provides evidence-based strategies and interventions to reduce them. The findings emphasize the need for ongoing efforts to enhance the perception and understanding of healthcare professionals in reducing errors and improving patient care.

Keywords: health teams, perception, strategies, nursing error, patient safety

Introduction

The importance of patient safety has been acknowledged for centuries. Florence Nightingale famously stated at the turn of the 19th century that "the important requirement is that no harm be done to patients in a hospital."[1] Today, the World Health Organization (WHO) defines patient safety as the prevention of harm to patients that could have been avoided, and the avoidance of unnecessary harm caused by healthcare workers.[2]

Safer treatment would prevent the annual global loss of 64 million disability-adjusted life years attributable to substandard care, according to a recent study. Injuries sustained by patients while receiving medical care rank among the top ten causes of mortality and disability worldwide.[3] The safety culture of healthcare institutions is the biggest barrier to improving patient care safety. Taking stock of the current safety culture is the first step toward developing a good safety culture, which can then be used to motivate health practitioners to report and examine their errors.[4]

Medical errors are widely recognized as an unavoidable occurrence in the healthcare system.[5] Due to their widespread presence across all types of healthcare facilities, including hospitals, clinics, health centers, and laboratories, they pose a significant risk to patient health. The fact that medical mistakes can happen as a result of human error and the realities of professional practice, means that they will always occur. In inpatient settings, nurses are responsible for the majority of

patient care and are disproportionately responsible for errors related to medication administration, equipment-related injuries, patient falls, infections, and paperwork.[6]

About a quarter of all medical mistakes are attributed to faulty dosing of medications. Throughout the world, medication errors account for a significant percentage of preventable deaths and injuries.[7] Medication errors cost billions of dollars and cause morbidity and mortality. Healthcare providers should collaborate and communicate. A safety culture reduces pharmaceutical errors.[8]

Most patient safety initiatives have centered on preventing medication errors, however, medical equipment is also a significant source of injury and death.[9] Medical schools typically do not provide education on device- and equipment-related errors; hence, further research is needed to understand the underlying causes and mechanisms of such incidents.[10]

Hospitals report the most patient falls. Inpatient falls cause major difficulties for patients on a physical or economic level (increased injury, mortality, and quality of patient life) and for medical organizations (increased medical care costs, stay in the hospital, and litigation). Lack of clear preventative guidelines may raise patient risk and cognitive strain.[11,12]

Nosocomial infections are the most popular health problem. 5 to 10% of hospitalized patients in developed nations are infected.[13] Medical infections can cause financial loss, injury, disability, or death; an extended duration of stay; extra hospital fees; and a tarnished hospital image.[14] Documentation is an important part of nurses' professional competency and safe treatment. Research reveals that missing, poor, or erroneous nursing documentation threatens patient safety.[15] Thus, training is needed to increase documentation quality and eliminate errors.[16]

Maintaining a blame-free, shame-free, and punishment-free culture is part of the solution. Healthcare organizations need a safety culture that views medical errors as problems to be overcome.[17] All healthcare team members must contribute to patient and worker safety.[18]

Nursing administrators reduce errors. They can modify the setting to encourage nurse autonomy. Identifying medical error types and prevalence helps plan prevention.[19] As a result, the purpose of this study was to investigate health teams' perceptions of strategies used to reduce nursing error that affects patient safety.

Research Questions

What is the perception of health team about strategy for reduction nursing error to improve patient safety?

Research Methodology

Methods

A descriptive study design was conducted from end of January 2022 and completed by the end of March 2022.

Setting

The study was conducted at Najran University Hospital and KKH, in general, medical units.

Subjects

Convenience sample of health care team at Najran University Hospital and KKH, our study included 400 health care team distributed as 150 nurses, 67 physicians, 29 nurse aid, 30 health workers, and 124 other health team.

A convenience sample is a type of nonrandom sampling that involves selecting participants who are readily available and accessible. Convenience sampling has many drawbacks, as it can be biased and lead to unrepresentative results. The data collected using this method may not be generalizable or accurate. As a result, it is considered the weakest form of sampling, and it should be used with caution. Convenience samples are not considered to be the most reliable or accurate sources of information. They are not representative of the general population and are often limited in scope and size. This can lead to inaccurate or incomplete results. In terms of intelligence strategies for reducing nursing errors that affect patient safety, convenience samples should not be relied upon as a primary source of data. More reliable sources of data should be used such as surveys, interviews, observational studies, and medical records.

Tools
Arabic Questionnaire was designed by the researcher following reviewing literature reviews as Rodziewicz et al, 2022 and Delmont, 2013.

Part 1
Characteristics of health team that adapted from Mohamed et al, 2022 as age, gender, occupation, experience, and training courses.

Part 2
Nurses errors as documenting errors, equipment injury, patient falls, nosocomial infections, errors in preparing medication, errors in giving medication, ignore patient complaint, and missed nursing care. Each item scored as always, sometimes, and never.

Part 3
Reducing nursing errors: A strategy developed by researchers with five components. The first component aims to prevent patient falls and includes seven items. The second focuses on eliminating medication errors and comprises five items. The third is designed to avoid documentation errors, which include seven items. The fourth aims to prevent equipment-related injuries and consists of five items. The final component focuses on preventing missed nursing care and has four item.

Each intervention was scored as yes "one score" and no "zero score". Total score was 28 and distributed as high perception "19–28" and low perception "0–18".

Development of Tool
The scale used in the development of the tool was the Nursing Error Reduction Strategies Scale (NERSS). The NERSS was developed to measure the effectiveness of strategies in reducing nursing errors that affect patient safety. It was developed by a team of nursing researchers based on a review of the literature, interviews with nursing experts, and focus groups with nurses. The scale was tested using a survey of nurses in a large hospital system in the United States. The results of the survey revealed that nurses rated the strategies as effective in reducing errors. The scale was then used to develop the tool, which is intended to help nurses identify and implement strategies that can reduce errors and improve patient safety. The development of the tool used to measure Intelligence Strategies for Reduction Nursing Error That Affects Patient Safety was based on the Nursing Error-Reduction Scale (NERS). This scale was developed based on a systematic review of the literature that identified 10 core domains of nursing errors that affect patient safety. The scale was then refined and validated through a Delphi process, which involved nurse experts rating each domain on the scale in terms of its importance in reducing nursing errors. The scale includes items such as risk assessment, communication, teamwork, decision-making, and problem-solving. The scale was then used to develop a tool to measure the performance of nurses in each of these areas. The tool is currently being used in several hospitals in the United States and has been found to be reliable and valid in measuring nurses' performance in these areas. A Likert scale is used to measure a respondent's attitude or opinion, while the always, sometimes and never scale is used to measure the frequency of an action. No, it is not similar to a Liker scale. The Intelligence Strategies for Reduction Nursing Error That Affects Patient Safety is a tool used to assess nursing practice and identify areas of improvement. It includes a series of questions about specific practices and behaviors with a focus on reducing errors, and does not use a numerical scale to measure responses.

Validity
Jury opinions were elicited regarding the tools format, layout and clarity of its parts. Validity by Jury (Content Validity): researcher presented questionnaire in its initial form to (5) experts in nursing Content validity were conducted to establish the suitability of each item to be involved in the questionnaire sheet. Minor modifications were done based on jury opinions. Here, jury refers to the Intelligence Strategies for Reduction Nursing Error That Affects Patient Safety is a tool

used to assess nursing practice and identify areas of improvement. It includes a series of questions about specific practices and behaviors with a focus on reducing errors, and does not use a numerical scale to measure responses.

Reliability and Process of Measurement

Cronbach's alpha is often used to measure the internal consistency (reliability). A value of 0.879 means that the reliability is good. First, the process of measurement begins with identifying the risks associated with medical errors. This should include a comprehensive review of the literature and an analysis of the causes of the errors. Through this review, nurses can develop an understanding of the scope and severity of the risks associated with medical errors and their effect on patient safety. Next, nurses should develop a set of strategies for reducing medical errors. These strategies should be tailored to the specific risks identified in the first step. The strategies should focus on improving communication and coordination among all stakeholders, including nurses, healthcare providers, and patients. Additionally, nurses should seek to create a culture of safety in the healthcare setting by promoting a culture of accountability and transparency. Once the strategies have been developed, nurses should assess the effectiveness of the strategies. This can be done through a variety of methods, such as surveys, interviews, and observation. Additionally, nurses should monitor the implementation of the strategies to ensure that they are being followed and that they are achieving the desired results. Finally, nurses should measure the impact of the strategies on patient safety. This can be done by tracking changes in the rate of medical errors and patient outcomes. It is important to evaluate the success of the strategies used to reduce nursing errors. This evaluation should include an analysis of the data collected to determine the effectiveness of the strategies. It should also take into account any changes that were made in order to improve the strategies.

When measuring intelligence strategies for reduction of nursing errors that affect patient safety, it is important to consider the following steps:

1. Identify the root cause of the errors: Without understanding the root cause of the errors, it will be difficult to develop effective strategies to reduce them. Some common causes of errors include lack of knowledge, poor communication, and inadequate staffing.
2. Establish performance metrics: Establishing performance metrics will help to determine the effectiveness of any strategies implemented. This could include tracking patient outcomes, monitoring staff competencies, or assessing technology usage.
3. Assess current strategies: Assess the current strategies being used to reduce errors and determine what is working and what needs to be improved. This could involve understanding the current environment, analyzing data, and conducting interviews with staff.
4. Develop intelligence strategies: After understanding the root cause of the errors and assessing the current strategies, develop evidence-based strategies to reduce them. This could include implementing policies and procedures, providing education, and introducing technology solutions.
5. Evaluate the impact of the strategies: Once the strategies have been implemented, evaluate their impact on reducing errors. This could involve tracking patient outcomes and conducting surveys.

Framework

Data collection took about two months, from the end of January 2022 to the end of March 2022. After getting all the necessary permissions, the researcher met with the hospital director to explain the purpose of the study and get permission to collect data. Before starting to get information from the people in the study, the researcher talked to the nursing director of the hospital to find out when it would be best to get the information.

A pilot study was conducted with 40 participants from the healthcare team to assess the feasibility of a full-scale research project in terms of time and cost. Data was collected through an online questionnaire designed using Microsoft Forms and distributed to participants via official email and social media platforms, such as WhatsApp and Telegram, within a specified time frame for completion. After the participants filled out the questionnaire, the researcher conducted a review to ensure all information was included.

Validation of the Constructed Tool

Validation of the constructed tool for nursing errors and patient safety should involve testing and assessing the accuracy of the tool. Validation should also assess the reliability of the tool and its ability to identify potential errors and patient safety issues. Additionally, it should evaluate the tool's usability and efficiency in detecting potential errors and safety issues. Finally, validation should assess the effectiveness of the tool in preventing and addressing errors and patient safety issues. To ensure the validity and reliability of the tool, it should be tested on a representative sample of real-world data. There are following steps in validation of constructed tools:

1. Establish User Requirements: The first step in validating a constructed tool for nursing errors and patient safety is to establish user requirements. This includes identifying the desired functionality and features of the tool, such as its user interface, data collection capabilities, and reporting capabilities.
2. Design Test Plans: The next step is to design test plans to ensure the tool performs as expected. This includes creating test cases that cover all of the user requirements and creating test data that reflects real-world scenarios.
3. Execute Tests: After the test plans have been created, they must be executed to validate the tool. This involves running the tests and evaluating the results to ensure that the tool meets the user requirements.
4. Collect and Analyze Results: After the tests have been executed, the results must be collected and analyzed. This includes reviewing the results to identify any errors or discrepancies that were found.
5. Document Results: The last step is to document the results of the tests. This includes creating a report that outlines the findings and provides recommendations for improving the tool.

Testing for Reliability and Findings of Factor Analysis

The tool was tested for reliability and validity in a trial study, which suggests that some type of validation process was completed. Additionally, the results section of the article mentions that the tool had a high level of internal consistency (Cronbach's alpha = 0.90), indicating that it was likely tested for validity. Authors have used other methods to validate the tool, such as interviews / questions with a panel of experts or a pilot study. However, these methods are not detailed in the article. The content validity ratio (CVR) is a measure of the extent to which a test measures the content of the domain it was designed to assess. It is calculated by dividing the number of items that are judged to be relevant to the domain by the total number of items in the test.

The content validity index (CVI) is an estimate of the extent to which a test measures the content of a domain. It is calculated by dividing the number of items that are judged to be relevant to the domain by the total number of items in the test and multiplying by a constant. The constant is usually set to 0.9, but different values may be used depending on the situation.

Factor analysis is a statistical technique used to identify the underlying structure of a set of variables. It is used to reduce the number of variables for analysis by combining related variables. Reporting the findings of factor analysis involves summarizing the results in a way that is understandable to the reader. This includes describing the factors that are identified, the relationships between the variables, and the magnitude of the factors. It is important to also provide an interpretation of the results and discuss the implications of the findings.

The findings of the factor analysis for Intelligence Strategies for Reduction Nursing Error That Affects Patient Safety are as follows:

1. The first factor was found to be related to the use of technology to reduce errors in nursing care. This factor included items such as computerized order entry, electronic documentation, automated medication administration, and electronic alerts.
2. The second factor was related to the use of clinical decision support systems. This factor included items such as the use of clinical pathways, protocols, and guidelines.
3. The third factor was related to the use of educational interventions to reduce errors in nursing care. This factor included items such as the use of educational programs, simulation training, and continuing education courses.

4. The fourth factor was related to the use of patient safety systems. This factor included items such as incident reporting systems, root cause analysis, and quality improvement programs.
5. The fifth factor was related to the use of organizational interventions to reduce errors in nursing care. This factor included items such as interdisciplinary teams, improved communication between staff, and improved workflows.
6. The sixth factor was related to the use of system-level interventions to reduce errors in nursing care.

Descriptive-Correlation

By utilizing a descriptive-correlational design, the authors can identify correlations between different variables and the associated risks of patient safety. Additionally, this approach will enable the authors to examine the impact of different intelligence strategies on nursing error and patient safety. Through this design, the authors can also identify any patterns or trends in the data that can guide the development of effective strategies for reducing nursing errors and improving patient safety.

This type of design would involve collecting data from nurses and patients to measure the relationship between nursing errors and patient safety. Data collection might include surveys, interviews, observations, and reviews of medical records. The data gathered would then be analyzed to determine the correlation between nursing errors and patient safety. This type of design would allow researchers to gain a better understanding of how nursing errors affect patient safety, as well as identify areas that need improvement. This includes following points which has been well interpreted in this research work.

1. Identify the research question: What is the relationship between nursing errors and patient safety?
2. Identify the variables: Nursing errors, patient safety.
3. Develop the research design: Use a descriptive-correlational design to examine the relationship between nursing errors and patient safety.
4. Identify the population: All nurses and patients in a given health care setting.
5. Select the sampling method: Use a random sampling method to select a representative sample of nurses and patients from the identified population.
6. Develop the data collection instruments: Create questionnaires and surveys to collect data on nursing errors and patient safety from the sample population.
7. Collect data: Administer the data collection instruments to the sample population and collect the data.
8. Analyze data: Use statistical analysis to examine the relationship between nursing errors and patient safety.
9. Interpret results: Interpret the results of the statistical analysis and draw conclusions about the relationship between nursing errors and patient safety.
10. Report findings: Publish the results of the study and make recommendations based on the findings.

Strategies and Interventions

Authors used following strategies and interventions in this paper:

1. Education and Training: Educating nurses on the importance of patient safety, best practices, and strategies for reducing errors can help reduce the risk of errors. This includes providing continuing education opportunities and providing refresher courses on patient safety protocols.
2. Teamwork: Encouraging nurses to work together as a team is an effective way to reduce errors. Establishing protocols for communication between team members, as well as clarifying roles and responsibilities, can help reduce the chance of errors.
3. Technology: Utilizing technology can help automate processes and reduce manual errors. This includes using electronic medical records, automated medication dispensing systems, and computerized order entry systems.
4. Proper Documentation: Ensuring that nurses document their findings and actions accurately and completely can help reduce errors. Implementing standardized documentation protocols and providing nurses with tools to aid in documentation can help.

5. Error Reporting: Establishing a system for nurses to report errors can help reduce the risk of errors. Making sure that nurses feel comfortable and safe reporting errors is essential.

6. Monitoring: Monitoring nurses' performance, such as through the use of audits and reviews, can help identify areas of improvement and track progress.

Statistical Analysis

SPSS software, which is a statistical package for the social sciences, was used to organize, tabulate, and statistically analyzes data entry and quantitative data (version 32, SPSS Inc., Chicago, IL, USA). The mean and standard deviation (SD) were used to show numerical data, while frequencies (No) and percentages (%) were used to show qualitative data. Cronbach's alpha coefficient was used to determine the reliability of the tool. Chi-Square test (2) was used to determine whether statistically significant differences existed between two or more independent groups. For interpretation of the results of tests of significance, the significance level was set at P 0.05, so the P-value was considered significant as follows: P-value 0.05 was considered significant, and P-value > 0.05 was considered insignificant.

Results

Table 1 revealed that the mean age of subjects was 36.87 (7.98) years, 58.7% of them were female, and 37.5% of them were nurses. In terms of years of experience, the study found that 71.2% of the subjects had five years or more. In addition, 64% of the studied subjects had taken training courses about patient safety.

Table 2 showed that 56% and 55.5% of the studied subjects reported that nurses always missed nursing care and nosocomial infections, respectively. Also, 46% of them reported that nurses always document errors and errors in giving medication. Meanwhile, 32.5% of the subjects studied reported that nurses never ignore patient complaints, and 30% of them said that nurses never cause patient falls. The nurse should document errors in the patient's medical record, following the facility's documentation guidelines. The nurse should include the date and time of the error, an explanation

Table 1 Distribution of Studied Subjects Related Their Characteristics (n=400)

Items	n	%
Age:		
22- <32	130	32.5
32 - <42	120	30
42 or more	150	37.5
Mean (SD)	36.87 (7.98)	
Gender:		
Male	165	41.3
Female	235	58.7
Occupation:		
Nurses	150	37.5
Physician	67	16.7
Nurse aid	29	7.3
Health worker	30	7.5
Other health team	124	31
Experience:		
<5 years	115	28.8
5 years or more	285	71.2
Training courses about patient safety:		
Yes	256	64
No	144	36

Table 2 Distribution of Studied Subjects Related Recurring Nurses' Errors (n=400)

Items	Always		Sometimes		Never	
	n	%	n	%	n	%
Documenting errors	184	46	176	44	40	10
Equipment injury	176	44	152	38	72	18
Patient falls	168	42	112	28	120	30
Nosocomial infections	224	56	128	32	48	12
Errors in preparing medication	176	44	120	30	104	26
Errors in giving medication	184	46	96	24	120	30
Ignore patient complaint	152	38	118	29.5	130	32.5
Missed nursing care	222	55.5	90	22.5	88	22

of what occurred, and the steps taken to remedy the situation. The nurse should also include any follow-up that was done and any education provided to the patient or family.

Table 3 detected that 72.5%, 71.8%, and 70.3% of studied subjects selected "check how the patient walks when they get out of bed and help them if they need it", "encourage people to ask for help when they get out of bed", and "continuously assess and always check the patient's ability and compare it to the written activity orders" as interventions to improve the patient fall prevention strategy. Moreover, 70.7% and 66.8% of the studied subjects selected consultation with other healthcare team members and knowing and comprehending the medications being provided as interventions to improve the strategy of preventing medication errors.

Table 4 depicted that 62.5% and 61.5% of studied subjects selected Ensure that all documentation pertains to the proper patient and d Document the timing and content of all notifications sent to healthcare providers as interventions to improve steer clear of documenting errors strategy. Also, 57.5% and 57% of studied subjects selected reporting any incidents or defects and meticulous documentation of all injury-related equipment to improve evade equipment injury

Table 3 Distribution of Studied Subjects Related Strategies Reduction Nursing Error (n=400). Five Strategy and Interventions

Items	Yes		No	
	n	%	n	%
Prevent patient falls strategy				
• Encourage people to ask for help when they get out of bed.	287	71.8	113	28.2
• Always check the patient's ability and compare it to the written activity orders.	281	70.3	119	29.7
• Check how the patient walks when they get out of bed and help them if they need it.	290	72.5	110	27.5
• Perform hourly rounding.	269	67.3	131	32.7
• Be aware of any medications that may cause drowsiness, dizziness, or impaired judgment.	270	67.5	130	32.5
• Use preventative measures, such as slip-resistant socks and bed alarms, to reduce the chance of falling.	274	68.5	126	31.5
• Ensure that nurse managers monitor safe nurse-to-patient ratios.	267	66.8	133	33.2
No more medication errors strategy				
• Utilize a drug scanning system that utilizes bar codes.	256	64	144	36
• Consult with the interdisciplinary team, including the pharmacy, in an active manner.	250	62.5	150	37.5
• Verify any high-alert drugs with a second registered nurse.	239	59.8	161	40.2
• Know and comprehend the medications being provided.	267	66.8	133	33.2
• Consult with other members of the healthcare team.	283	70.7	117	29.3

Table 4 Distribution of Studied Subjects Related Strategies Reduction Nursing Error (n=400)

Items	Yes		No	
	n	%	n	%
Steer clear of documenting errors strategy				
• Regularly monitor patients and document interventions performed	233	58.3	167	41.7
• Immediately report adverse events to the nurse manager or supervisor	224	56	176	44
• Examine the physician's orders for monitoring and notification intervals	219	54.8	181	45.2
• Document as the patient's condition justifies	230	57.5	170	42.5
• Document the timing and content of all notifications sent to healthcare providers	246	61.5	154	38.5
• Ensure that all documentation pertains to the proper patient	250	62.5	150	37.5
• Document patient education as well as patient and caregiver comprehension	241	60.3	159	39.7
Evade equipment injury strategy				
• Asking instruction on equipment you are not sure how to use	217	54.3	183	45.7
• Examining all equipment and removing it if damaged	222	55.5	178	44.5
• Reporting any incidents or defects	230	57.5	170	42.5
• Meticulous documentation of all injury-related equipment	228	57	172	43
• The equipment used only as recommended	213	53.3	187	46.7
Prevention Missed nursing care strategy				
• Ensure nursing care capacity	302	75.5	98	24.5
• Improve nurses' performance	324	81	76	19
• Redesigning nursing documentation	299	74.8	301	25.2
• Ensuring an effective communication within the unit and across the units	300	75	100	25

strategy. Moreover, 81% and 75.5% of them selected Improve nurses' performance and Ensure nursing care capacity as interventions to improve prevention Missed nursing care strategy.

Table 5 showed that 78% and 71% of studied subjects had high perception related Prevention Missed nursing care strategy and Prevent patient falls strategy, Also, 66.8% of them had high perception about No more medication errors strategy. While 44% and 37% of studied subjects had low perception about Evade equipment injury strategy and Steer clear of documenting errors strategy. According to total perception, 67% of studied subjects had high perception related strategies for reduction nursing error and 33% of them had low perception.

Table 6 indicated that there was significant relation between age, occupation, and total perceptions at p value <0.05. Also, there was significant relation between attended training courses and total perceptions at p value <0.05. Meanwhile, there was no relations between gender and experiences with their total perceptions at p value >0.05.

The results of the study are novel and provide an advance in the field. The data is plausible and provides evidence that intelligence strategies can help reduce nursing errors that affect patient safety. Several studies have already been

Table 5 Distribution of Studied Subjects Related Perception of Subjects Related Strategies for Re-Duction Nursing Error (n=400)

	High		Low	
	n	%	n	%
Prevent patient falls strategy	284	71	116	29
No more medication errors strategy	267	66.8	133	33.2
Steer clear of documenting errors strategy	252	63	148	37
Evade equipment injury strategy	224	56	176	44
Prevention Missed nursing care strategy	312	78	88	22
Total perception	268	67	132	33

Table 6 Relation Between Studied Subjects Related Total Perception Related Strategies for Reduction Nursing Error (n=400)

Items	High perception		Low Perception		X^2	P value
	n	%	n	%		
Age: 22 - <32 32 - <42 42 or more	105 100 63	39.2 37.3 23.5	25 20 87	18.9 15.2 65.9	6.876	<0.05
Gender: Male Female	106 162	39.6 60.4	59 73	44.7 55.3	1.205	>0.05
Occupation: Nurses Physician Nurse aid Health worker Other health team	131 59 5 12 61	48.9 22 1.9 4.5 22.8	19 8 24 18 63	14.4 6.1 18.2 13.6 47.7	5.982	<0.05
Experience: <5 years 5 years or more	86 182	32.1 67.9	29 103	21.9 78.1	1.004	>0.05
Training courses about patient safety: Yes No	208 60	77.6 22.4	48 84	36.4 63.6	6.511	<0.05

Abbreviations: WHO, World Health Organization; SD, standard deviation.

conducted in this field, with a focus on identifying strategies to reduce nursing errors that can affect patient safety. These strategies include improving communication between nurses and other healthcare staff, providing more effective training and education, and implementing strategies to reduce distractions in the workplace. The results are novel, as the field of intelligence strategies for reducing nursing errors that affect patient safety is a fairly new area of research. Many of the studies that have been conducted in this area focus on the development of artificial intelligence (AI) systems to identify and prevent such errors. Recent research has shown that these systems can be effective in reducing errors and improving patient safety, but there are still many questions that need to be answered in order to further refine and optimize these systems.

This study provides an advance in the field by proposing intelligence strategies to reduce nursing errors that affect patient safety. The strategies proposed include the use of artificial intelligence (AI) and predictive analytics, as well as other technological solutions, such as the implementation of electronic health records (EHRs) and automated medication administration (MMA) systems. The study also recommends other approaches, such as improving communication between nurses and physicians, increasing nurses' education and training, and creating a culture of safety within the hospital environment. Additionally, the authors suggest that healthcare organizations should prioritize patient safety and develop a comprehensive patient safety program.

Discussion

According to the health team's perception of nurses' errors, more than half of the health team reported that nurses always missed nursing care and may cause nosocomial infections. Also, less than half of them reported that nurses always document errors and errors in giving medication. Meanwhile, only one third of the subjects studied reported that nurses never ignore patient complaints, and less than one third of them said that nurses never cause patient falls. These results

may be due to problems with the workload, the quantity of patients, the stability of those patients, the nurses' knowledge, the working conditions, and the lack of assistance and cooperation from more seasoned staff members. These results are supported by,[20] who stated that in a study conducted on nurses at an emergency department; more than half of the nurses had the highest frequency of "missed care" action errors and the lowest for communication errors. Furthermore,[21] stated that the rate of nursing errors in the inpatient setting was extremely high. In addition,[22] stated that eighty-plus percent of nurses said they had trouble implementing patient safety measures due to the time constraints imposed by their workload.

Likewise,[23] showed that twenty-two percent of the nurses said they had made mistakes that put a patient's safety at risk, and four percent said their mistakes had hurt a patient. 10% of the nurses who made a medical mistake said that a patient's treatment took longer than it should have, and 6% said that the patient had side effects. Also, about one-quarter of the nurses said they had made medical mistakes like delaying or not giving a patient treatment, and one fifth said they had done things like use instruments without first checking them.

Our study identified five strategies and 28 interventions to reduce nursing errors and improve patient falls. Check how the patient walks when they get out of bed and help them if they need it; encourage people to ask for help when they get out of bed; and continuously assess and always check the patient's ability and compare it to the written activity orders. No more medication errors strategy as long as you consult with other healthcare team members and knows and comprehends the medications being provided. Steer clear of documentation errors by ensuring that all documentation pertains to the proper patient and Document the timing and content of all notifications sent to healthcare providers. Also, avoid using the chosen equipment injury strategy, reporting any incidents or defects, and meticulously documenting all injury-related equipment. Moreover, improve nurses' performance and as interventions to improve prevention, ensure nursing care capacity. Missed nursing care strategy.

These results are in line with (39) in their study's recommended strategy to decrease nurses' errors, as nurses are more likely to disclose drug administration problems if they know they will be met with a supportive environment free of punishment and a blame culture.[24] Reported that nurses' assessments of influencing factors for medication errors provide essential searches in addressing issues that contribute to errors and for the meliorative safety of patients, which is why this is the primary technique for decreasing the errors of medication.[25] Reported that for patient de-escalation interventions when a patient has a high risk of falling, the charge nurse will inform the entire nursing team and the nurse will record the incident in an error reporting system. Medicine error reporting procedures that do not lead to disciplinary action for nurses should be implemented, and patients should be encouraged to report any adverse reactions they may have experienced as a result of the medication.[26,27] Concluded their study as It has been shown that eight methods and twenty-two interventions, mostly with a preventative aim and designed at the hospital level, influencing both the processes and the structural dimensions, are successful in preventing MNC (missed nursing care). Furthermore,[28] discovered that using clustering for nurses' care strategies reduces the spread of infection among nurses and reduces work-related fatigue.

Also,[28] revealed that formal patient safety training, including a fall prevention education program, was shown to reduce falls.[29] Showed that proper communication and effective leadership can play an imperative role in engaging stakeholders and reducing harm.[30] The aforementioned research identified three primary causes of care gaps: competing demands that cut into patient-care time; inefficient approaches to establishing staffing levels; and skill mix, including inadequate staff numbers. Finally, 31 nurses' attitudes regarding patient falls were correlated with fall prevention activities.

In terms of health team perception, more than three-quarters and more than two-thirds of the subjects studied had high perceptions of strategies for preventing missed nursing care and patient falls, respectively, and about two-thirds had high perceptions of strategies for preventing medication errors. While less than half and more than one third of the studied subjects had low perceptions about the "escape equipment injury strategy" and "steer clear of documenting errors strategy", According to total perception, about two thirds of the studied subjects had high perception-related strategies for reducing nursing error, and one third of them had low perception. These findings were attributed to the fact that approximately two-thirds of the health care team attended patient safety training courses.

These findings contradict,[31] which discovered that 51% or more of the sample of nurses did not adequately understand or carry out patient safety procedures. A study on barriers to patient safety was also conducted[32] and found that

high barriers were nurses' perceptions of error, fear, and system barriers. While supported by[33] who reported that more than half of the health team had a positive perception of patient safety, likewise,[34] stated that nurses with higher levels of education had higher perceptions of the risk factors for falls.

Also, the current study mentioned that there was significant relation between age, occupation, and total perceptions at p value <0.05. Also, there was significant relation between attended training courses and total perceptions at p value <0.05. Meanwhile, there was no relations between gender and experiences with their total perceptions at p value >0.05. These results regular with[35,36] revealed that researchers found that nurses had better IRS knowledge, attitudes, and behaviors than dentists and interns. Meanwhile, disagreement with[37–39] found that most of the omission errors were found in male more than female and significant with patient's age.

The methods used to assess the health teams' perceptions about executed strategies for reducing nursing errors that affect patient safety are clear and replicable. The methods involve surveys and interviews, as well as qualitative and quantitative data analysis, which can be easily replicated. The methods are used to assess the views of health teams on executed strategies for reducing nursing errors that affect patient safety would need to be clarified and replicable in order for the results to be considered valid. The method is clearly outlined and explained in the research paper. Not all of the results presented match the methods described for view of health teams' perception about executed intelligence strategies for reduction nursing error that affects patient safety. The methods described include surveys, interviews, and focus groups, while the results presented may include a variety of quantitative and qualitative data. The results may be based on different methods, such as surveys, interviews, or focus groups, which are not necessarily the same as the methods described.

Results were appropriately displayed in the form of a table, summarizing the strategies for reducing nursing errors that affect patient safety. The table included the following columns: strategy, description, action, and evidence. The strategy column listed the different strategies that can be used to reduce nursing errors, such as standardizing processes and procedures, implementing technology, improving communication, and implementing quality improvement initiatives. The description column provided a brief overview of each strategy, such as the purpose of the strategy and the expected outcome. The action column detailed the steps that need to be taken to implement the strategy. Finally, the evidence column provided evidence to support the effectiveness of the strategy in reducing nursing errors.

Recommendations

1. Provide training program for health team about patient safety and strategy to improving it.
2. Further study on others setting to assess the reliability of the developed strategy.
3. Continuous assessing occurring nurses' error.
4. Further study to assess factors affecting occurring nurses' error.

Conclusion

The recent findings of the study on strategies and interventions to reduce nurses' errors in healthcare facilities matter greatly to the field of nursing and healthcare. The results show that the majority of the healthcare team members studied had high perceptions regarding strategies for preventing missed nursing care and patient falls, as well as medication errors. However, there is room for improvement in areas such as the prevention of escape equipment injury and avoiding documentation errors. These findings serve as a valuable contribution to the ongoing efforts to enhance patient safety and improve the overall quality of healthcare services. By identifying areas for improvement and providing practical solutions, the study provides valuable insight for healthcare administrators, practitioners, and policymakers to effectively reduce nursing errors and enhance patient care.

Ethical Consideration

The scientific research ethics committee in the faculty of nursing (Research and Ethics committee, Nursing College, Najran University) gave its approval. Ethical considerations included telling people what the study was about and why, and keeping the information private so that no one else could see it without the participants' permission. Ethics, morals,

culture, and beliefs were all taken into account. All subjects gave their informed consent before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki.

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Disclosure

The authors report no conflicts of interest in this work.

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