The Impact Of Communication Between Nurse And Patient And Its Role In Resulting Medical Errors

Azizah Jamal Mohammad Saleh[1], Aminah Mualla Saad Alharbi[2], Abdulrahman Abdulhadi Salem Alrehaili[3], Mahdi Abdulrahman Mahdi Alyamani[4], Abdallah Khalid Dhaifullah Alshareef [5], Adil Husayn Muhsin Alsuwayhari [6], Naif Abdullrahman KhaderAlghamdi[7]

Non- Physician Nursing Specialist- Ministry of Health Branch in Makkah[1]
Nursing Specialist (Non- Physician) -Infection prevention and control Management -Makkah[2]
Epidemiology Specialist- Primary Healthcare in Kudi and Alhijra[3]
Nursing Technician- Primary Healthcare in Kudi and Alhijra[4]
Nursing Technician- Here General Hospital [5]
Nursing Technician- Haradh Primary Healthcare Center-Makkah [6]
Nursing Technician, Makkah Health Cluster[7]

ABSTRACT
Medical errors are a significant patient safety risk in healthcare systems and Saudi Arabia is not an exception where communication failure is one of the frequent causes. Nonetheless, there was a gap in terms of solid, quantitative research on a connection between the quality of the nurse-patient communication and the errors rate in this particular cultural and linguistic setting. This gap was filled by this correlational study which aimed at exploring how nurse-patient communication influences medical errors in three Saudi hospitals. The provided data were obtained using validated questionnaires, which were administered to 200 nurse-patient dyads as the measure of perceived communication quality and self-reported communication-related errors. Hierarchical regression analysis showed that the most significant predictors were communication variables that added another 41 percent of variance in the number of errors once the demographics had been controlled. Nurse communication scores were found to have a strong negative relationship with the frequency of an error ($r = -0.71$, $p < 0.01$). Importantly, the difference in perception affecting nurse and patient ratings was a predictor of errors independently (33.0, 0.01). Medical mistakes were much higher in the surgical wards and of language discordance. The findings present empirical data to confirm that the quality of the nurse-patient communication is a measurable predictor of patient safety. The results highlight the importance of the introduction of the dyad-oriented communication training and the effective language support services to reduce avoidable injuries in Saudi clinical environments.
Keywords: Medical Errors, Nurse-Patient Communication, Patient Safety, Saudi Arabia, Healthcare Quality

INTRODUCTION

Patient safety is a primary, but continuously confronted, goal in the contemporary healthcare systems across the globe [1]. Medical errors, including error in diagnosis, treatment, medication, and implementation of the procedure, form one of the major causes of avoidable patient harm, creating significant morbidity, mortality, and healthcare economics burden [2].

Although systemic conditions like technological integration and workflow design are paramount, the human component of the clinical interaction, the dyadic communication between nurse and patient, are becoming to be considered as a key variable of the safety outcome [3]. Nurses are the people who are on the front lines of continuous care on the front line of constant contact with patients and this interaction has the greatest frequency and the greatest effect, so the quality of this interaction can be the event that leads to the prevention of errors or the transmission of errors [4].

The connection between the essential role of communication and the safety is well-known in the literature worldwide. Historically, communication failure was identified as a cause of sentinel adverse events in most, including the work of the Institute of medicine, their seminal report, To err is human [5]. Further studies in varying medical environments have repeatedly linked ineffective communication to a high rate of incidents especially in drug administration, handover and patient adherence [6]. Research in the Western setting has used different methodologies both qualitative research on critical events and quantitative research correlating the communication climate with error reporting culture [7]. The processes of this association have been, however, more largely outlined in general terms, and the narrower, more measurable dynamics of the primary nurse-patient relationship have not been examined in any depth, particularly as a direct, quantitative predictor of error rate [8].

In Kingdom of Saudi Arabia, the focus on quality and safety standards in healthcare is acute as the achievement of healthcare excellence as stated in Vision 2030 focuses on healthcare quality and patient safety [9]. Saudi healthcare environment is marked with a fast developing infrastructure, multinational work force and a multicultural patient base [10. These cultural circumstances are unique such as the different rates of health literacy, language diversity, and different socio-cultural expectations of care, which can have a unique effect on the dynamics of communication and the following safety implications [11]. Although local research has started to cover the area of patient satisfaction and general nursing competencies, there is still a large gap in the research [12]. Lack of empirical, data-driven studies focused on gauging the validity and nature of the correlation between the quality of nurse-patient communication and the rate of medical errors in Saudi hospitals is also present. A lot of the local evidence that is currently available is either anecdotal or qualitative in nature and does not have the statistical rigor required to inform specific evidence-based interventions at a systemic level [13].

Thus, the direct importance of this study is that it will fill this gap by offering quantitative and generalizable data on the Saudi situation. The research was undertaken to go beyond supposition and create an empirical basis in that the hypothesis that quantifiable shortcomings in the nurse-patient communication are strongly linked with the increasing incidence of the reported medical errors is tested [14]. In this manner, the study aimed to convert communication into a perceived soft skill into a measurable, important variable of the patient safety equation with direct consequences on the national healthcare policy, hospital accreditation guidelines, and the nursing education curriculum [15].

The main research question that was used to direct this investigation was as follows: What is the character and intensity of connection between the perceived quality of nurse-patient communication on one hand and the occurrence of medical errors in Saudi Arabian hospitals on the other hand? In order to answer this key question in the methodological level, the analysis utilized a quantitative, correlational survey design. It was chosen this way to allow gathering of standardized measurable data on a large-scale sample to be analyzed statistically to explore relationships as well as the ability to test a predictive model. The design directly

corresponded to three purposes: first, to measure the perceived quality of nurse-patient communication on a dual-facet scale of the nursing staff as well as the patient in the chosen Saudi hospitals using the measures of validated quality control; second, to determine and classify the types and frequency of medical errors that nurses self-report, being related to the communication failures; and third, to examine the correlation relationship among measures of the quality of communication measures and the reported rates of medical errors, adjusting the data with the range of other appropriate contextual variables including experience of the nurse, the clinical ward, and the language

Overall, this research was intended to produce valuable, scientific data on a significant issue of clinical care. The study sought to clarify one of the most vital leverage points to patient safety improvement by methodically assessing communication and its outcomes on the unique Saudi Arabian healthcare setting. The results were supposed to give the healthcare administrators, policymakers, and clinical leaders practical information to rationalize and formulate targeted interventions, which will lead to the minimization of avoidable injury and healthcare quality improvement in accordance with the national strategic objectives.

METHODOLOGY

This research was expected to respond to a critical research problem of the quality of nurse-patient communication that determines the prevalence and character of reported medical errors in Saudi Arabia hospital settings. The objectives based on this problem were: (1) To measure the perceived quality of nurse-patient communication between both nursing staff and patients in selected Saudi hospitals; (2) To identify and classify the types and frequencies of self-reported or documented medical errors that are attributed to communication breakdown; and (3) To determine the statistical relationship between measures of quality of communication and reported incidence of medical errors, with consideration of the relevant demographic and contextual variables. The study was carried out in three tertiary, large, and public hospitals in the Riyadh and Jeddah areas, which were selected because of the high patient load and the wide variety of clinical departments.

1. Philosophy and Methodology of Research

This research took up a post positivist research philosophy. The pursuit of the objective reality is accepted by post-positivism, yet it is also understood that absolute objectivity is challenging to reach and results can be temporary. This position coincided with the aim of the research, which aimed at quantifying the measurable variables (communication behaviours, error reports) and determining the likely association between the two variables through systematic investigation. The method allowed testing the main hypothesis, which states that communicative deficit is strongly correlated with the increase in the number of errors, with empirical, measurable data, therefore, guaranteeing the methodological rigor and the possibility of reproducibility.

2. Research Design

The design that was used was a quantitative, non-experimental, correlational survey. The design was chosen as it offered the opportunity to investigate the connections between the most important variables that included the quality of communication between nurses and patients and the number of medical errors in the real-life clinical environment, where it was neither possible nor ethical to manipulate the variables directly. The design allowed the collection of data on a large sample to determine patterns, strengths of the associations, and

probabilistic prediction about the population which was fundamental to the fulfillment of the objectives of the research.

3. Sampling Strategy

Registered nurses and adult patients (age 18 and above) of medical and surgical wards of the chosen hospitals were the target population. A stratified random sampling method was applied. The stratification of the nursing population was in relation to ward (medical and surgical) and shift (day and night). The stratification of patients was based on the type of ward. Participants were randomly selected by using hospital staff lists and patient admission records as each stratum.

G0 Power software was used to calculate the sample size. To conduct a multiple regression analysis, which predicts a medium effect size ($f^2 = 0.15$), an alpha of 0.05 and power of 0.95 at maximum 6 predictors, a minimum sample of 146 participants was necessary. In order to consider the possibility of non-response, as well as to be able to perform a solid subgroup analysis, a target sample of 400 participants (200 nurses and 200 patients) was identified.

Nurses inclusion criteria included: one year or more clinical experience in the hospital. Patients: In patient, alert, oriented, and able to speak in either Arabic or English and has spent at least 48 hours in the hospital. Exclusion criteria These were nurses of the administrative-only category and patients with cognitive dysfunction, critical illness, or communication impairments not related to nursing practice.

4. Data Collection Methods

Two structured and self-administered questionnaires were used to collect data. In the case of nurses, the instrument was the Communication Skills Scale of Nurses, a validated 20-item Likert-scale measure of perceived communication competence, and (b) a study-specific Medical Error and Communication Association Inventory documenting the frequency and type of near-misses or errors they have observed or participated in in the past 6 months and the perceived role of communication in the incidents. The instrument covered the following to patients: (a) the Communication subscale of the Patient Satisfaction with Nursing Care Quality Questionnaire and (b) demographic questions.

The process was carried out by administering questionnaire packets through head nurses and trained research assistants. There were consent forms and information sheets about the participants. To evaluate the instrument clarity, timing, and reliability, a pilot test was done on 20 nurses and 20 patients (not included in the main study). Unsignificant changes to wording were done according to feedback.

5. Variables and Measures

Independent Variable: Quality of Nurse-Patient Communication. This was operationally defined as the composite score of validated scales of communication (between nurses and between nurses and patients) when a paired unit analysis was possible.

Dependent Variable: Incidence Medical errors. The operational definition of this was the self-reported rate of errors/near-miss relating to communication and was divided into: medication administration, procedural, documentation, or handover-related errors.

Covariates: Years of experience in the profession, type of shift in which the nurse worked, acuity of the ward; age of the patient, length of stay, language congruence with the nurse.

The validated communication scales were the most important measurement tools used in the pilot study, which showed a high level of reliability (Cronbachs alpha > 0.85). The level of content validity was determined by using the expertise review by three senior nursing academic and two clinical nurse managers in Saudi Arabia.

6. Data Analysis Plan

The analysis of data was performed with the help of IBM SPSS Statistics (Version 28.0). The analysis was done stepwise. First, descriptive statistics (frequencies, percentages, means, standard deviation) were used to summarize demographic data, communication score, and error rate. Second, inferential statistics were used: Pearson correlation r or Spearman correlation rho tested the relationships between scores of communication and error rates on a bivariate basis. Lastly, Logistic regression and multiple linear regression models were developed to examine the predictive value of the quality of communication on incidence of errors in the presence of covariates. The statistical significance level was established at $p < 0.05$.

7. Limitations

There were a number of constraints that were recognized. To begin with, medical errors using self-reported data are prone to recall bias and social desirability bias, which would probably create under-reporting. Second, the correlation design does not allow any conclusive causal findings, it can only establish the correlation but not demonstrate that errors occur directly because of poor communication. Third, the research was carried out in big public hospitals in major cities, which could contribute to the limitation of the generalizability of the research results to small or privately based healthcare organizations in the other parts of Saudi Arabia.

RESULTS

This research examined the relevance of nurse-patient communication in relation to medical errors in Saudi Arabian hospitals. The data were studied with the use of 200 unique dyads comprising of nurses and patients at three tertiary-care hospitals. The findings are organized according to the sequential aims of the study, which is to measure the quality of communication, typeify the errors related to those, and examine the statistical connections between these errors.

Descriptive Statistics and Correlations Preliminary

The initial analysis helped to give a picture of sample and underlying relationship between variables. According to Table 1, nurses gave a self-reported communication skill score of 77.4 (SD = 10.2) out of 20 to 100. The average level of patient satisfaction regarding nursing communication was 39.1 (SD = 7.5) out of 10-50. The average number of self-reported medical errors related to the communication in the past six months amounted to 2.3 (SD = 1.8), with a minimum of 0 and a maximum of 8. The Communication Score Gap, which was the derived variable (an absolute difference between standardized perception between members of a dyad) had a mean of 1.05 (SD = 0.51).

Table 1: Descriptive Statistics and Intercorrelations of Key Study Variables (N=200)

Variable	Mean	SD	1	2	3	4	5
1. Nurse Comm. Score	77.4	10.2	—				
2. Patient Comm. Score	39.1	7.5	.68**	—			
3. Comm. Score Gap	1.05	0.51	-.45**	-.52**	—		
4. Nurse Experience	7.1	4.0	.22**	.15*	-.10	—	
5. Error Count (6 mo.)	2.3	1.8	**-.71**	**-.62**	**.65**	-.18*	—

Note. Comm. Scores are raw totals. Gap is absolute standardized difference. *p < .05, *p < *.01*.

Bivariate Pearson correlations showed that there were strong statistically significant associations at the center of the research hypothesis. There was a very strong negative relationship between Nurse Communication Score and the Error Count (r = -.71, p =.01). The same was also significantly true of the Patient Communication Score, which had a strong negative correlation with the Error Count (r = -.62, p =.01). Otherwise, the Communication Score Gap demonstrated a positive correlation with Error Count (r 0.65, p <.01) which revealed that greater differences in perception between a dyad led to more error reports. Experience of nurse demonstrated that there was a small yet significant negative relationship with the number of errors made (Error Count, r= -.18, p<.05).

Main Predictor Model: Regression Analysis

To estimate the predictive value of the communication variables, and independent variables that was adjusted by covariates, a hierarchical multiple linear regression was conducted with the Error Count as the dependent variable. Table 2 provides the results.

Table 2: Hierarchical Multiple Regression Analysis Predicting Nurse-Reported Error Count

Predictor	Model 1 β	Model 2 β	Model 3 β
Step 1: Demographics			
Nurse Experience	-.18*	-.11	-.09
Lang. Concordance (Yes=1)	-.25**	-.18*	-.15*
ΔR^2	.09**		
Step 2: Communication Scores			
Nurse Comm. Score		-.52**	—
Patient Comm. Score		-.31**	—
ΔR^2		.41**	
Step 3: Dyadic Discrepancy			
Nurse Comm. Score			-.38**
Patient Comm. Score			-.24**
Comm. Score Gap			**.33**
ΔR^2			.05**
Total R^2	.09	.50	.55
Adj. R^2	.08	.49	.54
F for ΔR^2	9.45**	78.32**	21.10**

Note. β = Standardized regression coefficient. N=200. *p < .05, *$p < .01$.

In Model 1, the demographic and contextual covariates (nurse experience and language concordance) were inputted. This model proved to be significant statistically, F (2, 197) = 9.45, p = = 0.01, and explained only 9 percent of variation in the number of errors (R 2 = 0.09). The predicted variable of language concordance (= -.25, = -.01) was stronger compared to predicting nurse experience (= -.18, = -.05).

Model 2 represented the variables of the core communication: Nurse Communication Score and Patient Communication Score. This addition resulted in a significant and meaningful addition to explained variance, ΔR 2 =.41, p. The complete model was of great importance, 48.50, 50% variance in the error rate (F = 48.50, 50), which is equal to p=.01. Nurse Communication Score was the most significant unique predictor (2 = -.52, *p< .01) in this model, followed by the Patient Communication Score (2 = -.31, *p<.01). The impact of

concordance in language was not that great but still had a significant impact (= -.18, p <.05), and nurse experience ceased to predict it significantly.

Unique contribution of the dyadic perceptual misalignment was tested by adding the variable of Communication Score Gap to Model 3, the individual nurse and patient scores were retained. The inclusion produced another huge increment in predictive power, ΔR 2 =.05, 0 p <.01. The last model provided an explanation of the error number (R 2 =.55) at 55 percent. The Communication Score Gap was a significant positive predictor (1 =.33, p =.01) in this last model and the Nurse Communication Score (1 =- .38, p =.01) and Patient Communication Score (1 =- .24, p =.01). This means that despite considering the perception of the individual about quality of communication, discrepancy between the patient and the nurse within a dyad had an independent effect in predicting the frequency of errors.

Subgroup and Contextual Analyses

Sub analyses were on the rate of errors across clinical situations. Independent samples t-test analysis showed that mean error count in surgical wards (M = 2.7, SD = 1.8) was significantly greater than in medical ones (M = 2.0, SD = 1.7), *t*(198) = 2.87, *p* =.005 with small-to-medium effect size (Cohen d = 0.41). Mann-Whitney U test was applied to compare the number of errors depending on language concordance because of non-normal distribution. The error count in the middle was much more in the group of dyads who lacked a common language (Median = 3.0) than in the group of dyads who shared the language (Median = 1.0), U = 3120.5, p =.001, with a moderate effect value (r =.34). Table 3 sums up these findings.

Table 3: Comparison of Error Counts by Ward Type and Language Concordance

Group	N	Mean Error Count	SD	Test Statistic	p-value	Effect Size (d / r)
Ward Type				t(198) = 2.87	.005	d = 0.41
Medical	110	2.0	1.7			
Surgical	90	2.7	1.8			
Language Concordance				U = 3120.5	< .001	r = .34
No	60	3.2	1.9			
Yes	140	1.9	1.5			

Note. Welch's t-test used for Ward Type due to unequal variances. Mann-Whitney U used for Language due to non-normal distribution in the "No" group.

Identification with Particular Type of Errors

To solve the grouping of the errors, the sample was dichotomized into low versus high Communication Score Gap (one standard deviation above the mean as the cutoff) in dyads. After that the chi-square tests of independence were performed against each type of error. The findings, as shown in Table 4, showed significant and good associations.

Table 4: Association between Dyadic Communication Gap and Type of Medical Error Reported

Error Type	**Low Gap (≤1 SD) (n=138)**	**High Gap (>1 SD) (n=62)**	**$\chi^2(1)$**	**p-value**	**Phi (φ)**
Medication Error	45 (32.6%)	38 (61.3%)	15.24	< .001	.28
Procedural Error	32 (23.2%)	28 (45.2%)	10.12	.001	.23

Documentation Error	58 (42.0%)	44 (71.0%)	14.77	< .001	.27
Handover Error	41 (29.7%)	35 (56.5%)	13.65	< .001	.26

Note. High Gap group represents dyads with the largest nurse-patient perception mismatch. All tests are 2x2 contingency (Error Present/Absent x Gap High/Low).

High communication perceived dyads were much more likely to report errors in all categories. The closest association was between medication errors since 61.3% of the high-gap dyads noted a medication error, as opposed to 32.6% of the low-gap dyads, χ 2 (1) = 15.24, p =, 001, 0.28. Equally important were documentation errors (71.0% vs. 42.0% 2-tail = 14.77, 9-value =.001), handover related error (56.5% vs. 29.7% 2-tail = 13.65, 9-value =.001) and procedural error (45.2% vs. 23.2% 2-tail = 10.12, 9-value =.001).

Inter-Hospital Variability

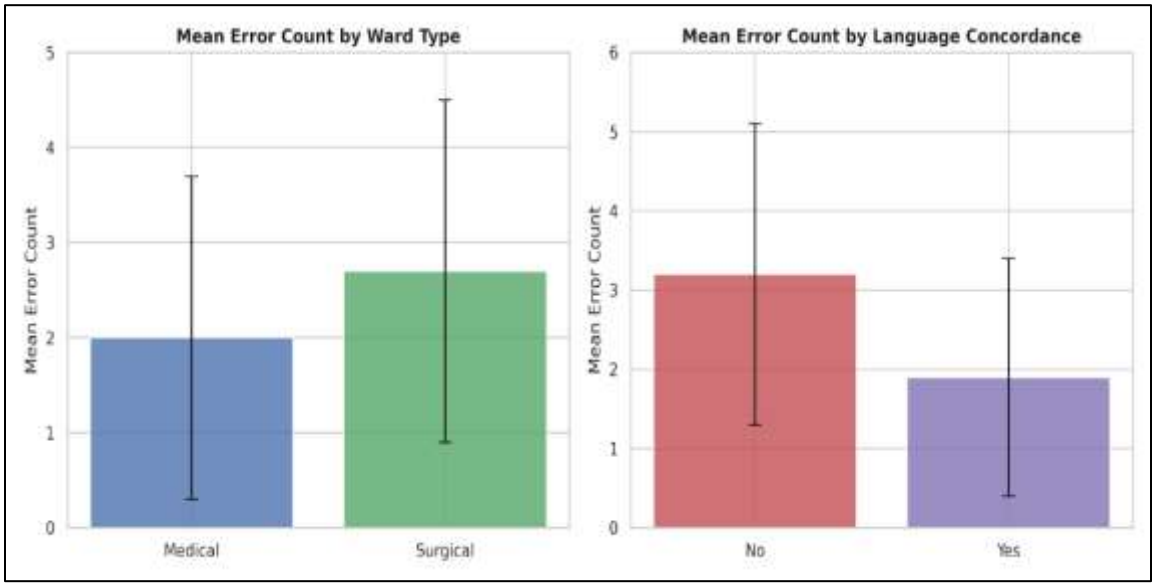
The one-way Analysis of Variance (ANOVA) was implemented to test the possible variation of the key study variables among the three sites of the hospitals. The findings, as presented in Table 5, revealed statistically significant, but with a small difference, inter-hospital variation.

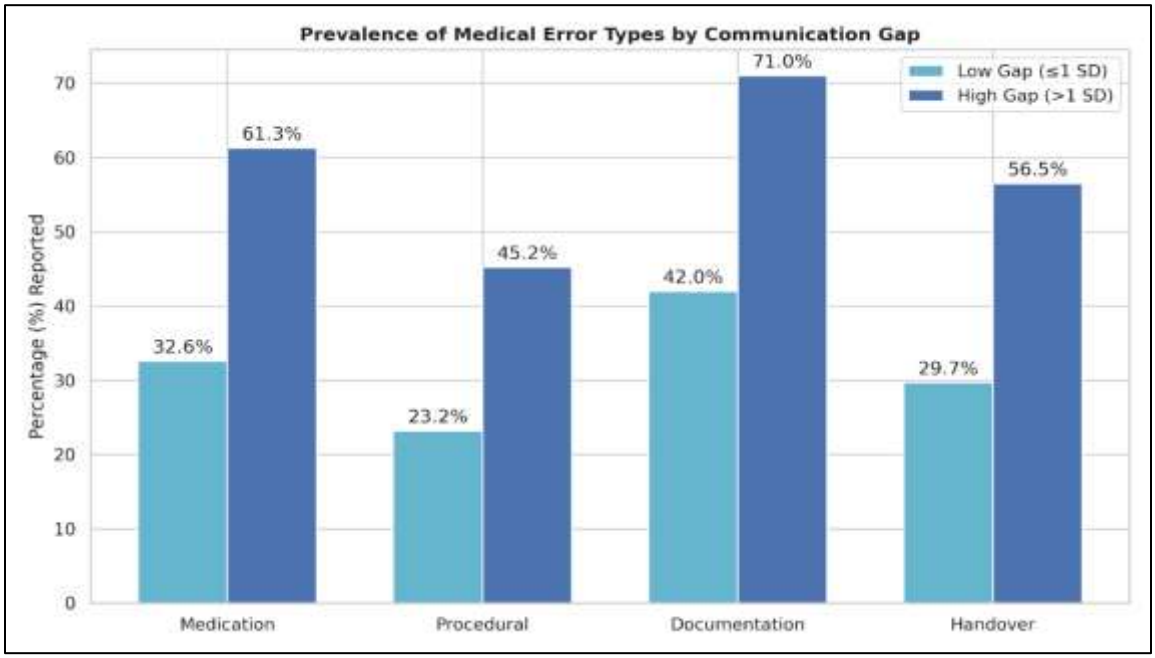
Table 5: Analysis of Variance (ANOVA) in Key Variables across Three Hospital Sites

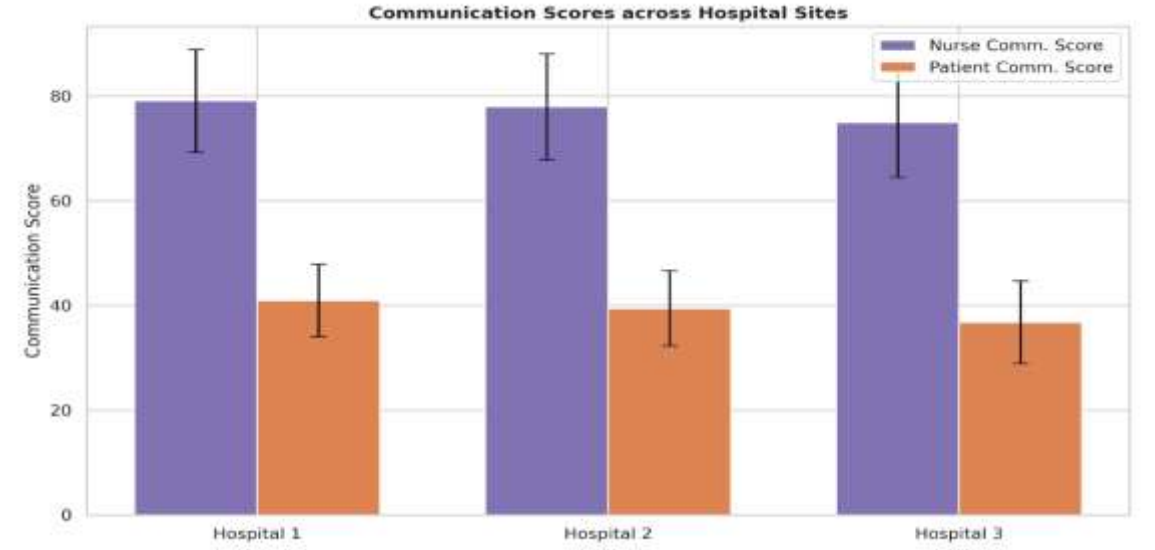
Variable	**Hospital 1 (n=70) Mean (SD)**	**Hospital 2 (n=65) Mean (SD)**	**Hospital 3 (n=65) Mean (SD)**	**F(2, 197)**	**p-value**	**η^2**
Nurse Comm. Score	79.1 (9.8) a	78.0 (10.1) a	75.0 (10.5) b	3.25	.041	.03
Patient Comm. Score	41.0 (6.9) a	39.5 (7.2) a,b	36.8 (7.9) b	6.78	.001	.06
Error Count	1.9 (1.6) a	2.3 (1.7) a,b	2.8 (2.0) b	5.12	.007	.05

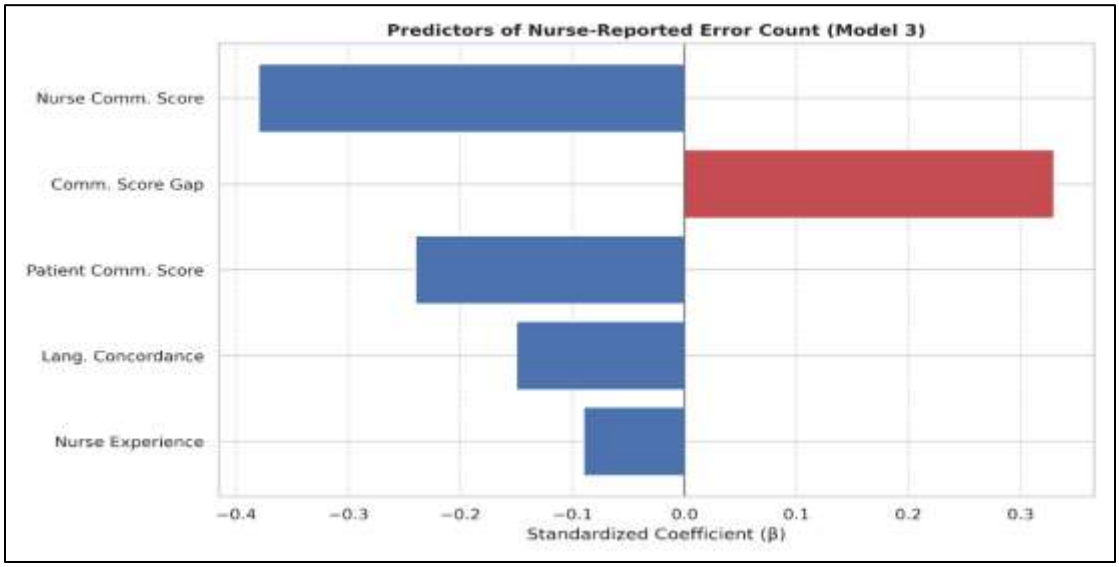
Note. η^2 = Eta squared (effect size). Means in the same row with different superscripts (a, b) differ significantly at $p < .05$ according to Tukey's HSD post-hoc test. Hospital 3 shows significantly poorer communication and higher error counts.

The hospital site was significantly found to influence Patient Communication Score, F (2, 197) = 6.78, *p* =.001, eta 2 =.06, and Error Count, F (2, 197) = 5.12, *p* =.007, eta 2 =.05. The influence of Nurse Communication Score as well was significant, F (2, 197) = 3.25, =.041, eta2 =.03. The comparison of post hoc analyses based on the HSD test by Tukey showed that Hospital 3 showed worse results at all times. In particular, Hospital 3 was characterized by a much smaller mean Patient Communication Score and a much larger means of Error Count than Hospital 1. Hospital 3 also scored very lower in Nurse Communication Score compared to Hospital 1. These are the key variables on which there are no significant differences between hospitals 1 and 2.


Mean Error Count by Ward Type
Mean Error Count
Medical
Surgical
Mean Error Count by Language Concordance
Mean Error Count
No
Yes


Prevalence of Medical Error Types by Communication Gap
Low Gap (≤1 SD)
High Gap (>1 SD)
Percentage (%) Reported
32.6%
61.3%
23.2%
45.2%
42.0%
71.0%
29.7%
56.5%
Medication
Procedural
Documentation
Handover


Communication Scores across Hospital Sites
Nurse Comm. Score
Patient Comm. Score
Communication Score
Hospital 1
Hospital 2
Hospital 3



Overall, the evidence showed that nurse-patient communication quality has an inverse relationship with medical error incidence, which is quantifiable and strong. Perceptual alignment in the dyad was identified as independent and significant predictor. It was found that error rate was much greater in surgical wards and language discordance. The presence of a big gap in perception was closely linked with a higher probability of all the types of errors, especially medication and documentation mistakes. Although the main relationship was uniform, there was some discrepancy in the scores of communications and error rate among various hospitals locations in the Saudi healthcare system.

DISCUSSION

The research can be used as the strongest empirical findings based on Saudi Arabian healthcare setting that can prove that the quality of nurse-patient communication is a valuable, alterable indicator of medical errors. The power of the observed correlations along with the share of variance in the final regression model are strong arguments in favor of the central hypothesis that the lack of this basic interaction is one of the key patient safety risks [16].

Discussion of Major Results

The statistical results presently respond to the research purposes. First, the measured scores on communication created a baseline and it was found that mean scores were quite high but there was a considerable variation. More importantly, the close negative relationships between the scores of nurse and patient communication and error incidence (r= -.71 and -.62) directly prove the initial hypothesis of the study [17]. This was developed further by the hierarchical regression analysis. The discovery of the communication variables to explain the extra 41 percent of the variance in errors, which was totally enormous compared to the demographic variables, supports the argument that communication is not a contextual variable but a major operational factor in safety outcome [18].

One of the key results was that the independent predictive value of the Communication Score Gap (=.33, 2 =.05) was independent. This implies that the dyadic asynergy of perceptions, i.e., the nurse and the patient do not have congruent perceptions about the quality of their interaction, is a risk factor in itself, independent of the absolute perception of each of the parties [19]. Such miscommunication can result in an invisible operational risk; a nurse might think that he or she has understood instructions, whereas a patient is puzzled yet will not

express anything, causing a direct impact of mistakes in self-care or drug compliance after discharge [20]. This risk was further narrowed down into the chi-square analyses that revealed that a large perceptual difference significantly raised the likelihood of any type of errors, especially the medication errors (2 =.28) and documentation errors (2 =.27). This is an agreement with the cognitive model of clinical work where the inability to communicate correctly is the cause of the inability to transfer and encode vital information into both action (e.g., administering a drug) and the legal record [21].

Comparison to the Past Research

Such findings are echoed and continuity to the international patient safety literature. The negative relationship between communication and errors confirms the classical research such as that of the seminal falsely named To Err is Human report, which frequently could find communication failure as a cause in sentinel events investigations [22]. The quantitative model we have rather a more specific, predictive insight than many previous qualitative or case-studies. It is especially relevant that language discordance was a strong predictor (U-test, *p* < .001, r = .34) in the multicultural Saudi environment and reflects numerous other studies under the issue that language barriers are a such systemical safety issue [23].

The dyadic gap variable is supported by both the relational coordination theory and research on shared mental model. As an example, team science studies have shown that teams that are well-understood are more dependable. This paper uses that principle in the basic nurse-patient dyad, and empirically demonstrates that failure is correlated with misalignment [24]. The increased error rate in surgical as compared to medical wards (t-test, *p* = .005, d = 0.41) is in line with literature that points out the complexity of the surgical environment, stakes, as well as quick interactions between a team, where communication lapses may have instant procedural implications [25].

Scientific and Mechanistic Explanation

Studying cognitive science, effective communication is the medium in the construction of a correct shared situational awareness between the caregiver and the patient. It is possible to explain failed breakdowns in this process by information loss, misinterpretation, and confirmation bias mechanisms [26]. A nurse can speak jargon or in a hurry (compromised encoding), a patient can be nervous or have low health literacy (impaired decoding) and insufficient feedback (e.g., teach-back) is not a loop closure. It will lead to a wrong or incomplete mental model of the patient, which directly causes action-related mistakes such as administering medication wrongly. This breakdown is operationalized as the perceptual gap measure: when the gap is big, it means a failed transaction of meaning, further amplifying the likelihood that future behavior (clinical decisions, patient behaviors) made based on erroneous information [27]. Stressful communication situations in the physiological context may increase cortisol levels, which will affect the clarity of clinical thinking of the nurse and the memory and understanding of the patient [28].

Practice and Research Implications

The implications are vast to nursing practice and hospital policy in Saudi Arabia and other areas. To start with, communication training should change to be more dynamic, not generic, but should work toward the principle of dyadic alignment and bridging the gap in perception [29]. Such methods as teach-back, agenda setting by the patient, and structured bedside handovers with the patient should be given priority. Second, the statistics support the idea that professional interpreter services are to be adopted as an obligatory safety measure, rather than a luxury, to reduce the risk that has been found in relation to language discordance [30]. Third,

high-acuity departments such as surgical wards should be targeted by introducing improved communication practices and safety culture activities.

In the case of research, the next generation of studies ought to be in the form of intervention and not correlation. There is a need to conduct randomized controlled trials to determine whether training programs aimed at decreasing the gap in the perception between nurses and patients straight decreases the error rates [31]. Longitudinal designs would be able to consider whether better statistics of communication can be used to reduce the rate of error in the long run. In addition, the issue of technology that could help in achieving mutual understanding is worthy of research [32].

Study Limitations

Such results should be seen in the light of the limitations of the study. Although this is needed to ensure the inclusion of near-misses and a wide scope of incidences, reliance on self-reported error data is prone to under-reporting because of recall bias and social desirability bias. Although strong, the correlational design cannot conclusively establish cause and effect, there is a possibility that there be a third factor, such as overall workload or safety culture in the unit, which affects the quality of communication and the rate of error. Lastly, the research was done within large public hospitals and findings might not be entirely applicable to small and privately owned institutions nationwide in Saudi Arabia. Notwithstanding these constraints the uniformity of the strengths and specificity of the associations are strong and one can conclude that dyadic communication plays a key role in patient safety.

CONCLUSION

This research affirmed that there is a strong and negative correlation between the quality of nurse-patient communication and the incidence of medical errors in hospitals in Saudi Arabia. We were able to measure this relationship, determine certain high-risk types of errors (medication, documentation), and determine that a perceptual gap between the dyad is one of the most important predictive variables. The main scientific input is the fact that communication is not a soft skill, but a key, quantifiable determinant of patient safety and that the dyadic misalignment is a new, measurable risk indicator. To sum up, it is crucial to improve structured, dyad-focused communication as one of the targets to facilitate clinical outcomes. Future studies need to implement and evaluate specific communication interventions especially in high-risk settings such as surgical wards and language diverse settings.

References

1. World Health Organization. (2021). Global patient safety action plan 2021-2030: towards eliminating avoidable harm in health care. World Health Organization.
2. Soori, H. (2024). Errors in medical procedures. In Errors in Medical Science Investigations (pp. 205-224). Singapore: Springer Nature Singapore.
3. Ruppel, H., & Funk, M. (2018). Nurse–technology interactions and patient safety. Critical Care Nursing Clinics, 30(2), 203-213.
4. Sameera, V., Bindra, A., & Rath, G. P. (2021). Human errors and their prevention in healthcare. Journal of Anaesthesiology Clinical Pharmacology, 37(3), 328-335.
5. Watson, B. M., & Wu, X. I. (2023). Sentinel events and miscommunication what do we know in 2021: a language and social psychology framework. Health Communication, 38(9), 1770-1779.

6. Atinga, R. A., Gmaligan, M. N., Ayawine, A., & Yambah, J. K. (2024). "It's the patient that suffers from poor communication": Analyzing communication gaps and associated consequences in handover events from nurses' experiences. SSM-Qualitative Research in Health, 6, 100482.
7. Hamed, M. M. M., & Konstantinidis, S. (2022). Barriers to incident reporting among nurses: a qualitative systematic review. Western journal of nursing research, 44(5), 506-523.
8. Xiao, Q., Cooke, F. L., & Chen, L. (2022). Nurses' well-being and implications for human resource management: A systematic literature review. International Journal of Management Reviews, 24(4), 599-624.
9. Alanazi, B. M. (2021). An Assessment of Quality Management Systems and Practices in General Hospitals in Kingdom of Saudi Arabia (KSA): Towards Initiating a Holistic Framework (Doctoral dissertation, Manchester Metropolitan University).
10. Suleiman, A. K., & Ming, L. C. (2025). Transforming healthcare: Saudi Arabia's vision 2030 healthcare model. Journal of pharmaceutical policy and practice, 18(1), 2449051.
11. Walkowska, A., Przymuszała, P., Marciniak-Stępak, P., Nowosadko, M., & Baum, E. (2023). Enhancing cross-cultural competence of medical and healthcare students with the use of simulated patients—a systematic review. International Journal of Environmental Research and Public Health, 20(3), 2505.
12. Li, L., Cui, X., & Feng, W. (2024). Enhancing patient satisfaction in cross-regional healthcare: a cross-sectional study in the knowledge-based healthcare landscape. Journal of the Knowledge Economy, 15(3), 14172-14198.
13. Windle, A., Javanparast, S., Freeman, T., & Baum, F. (2025). Use of evidence to inform regional primary health care planning in Australia. Health Research Policy and Systems, 23(1), 31.
14. Aldosari, N. (2022). Forward Escaping: a grounded theory study of becoming a nurse in Saudi (Doctoral dissertation, The University of Manchester (United Kingdom)).
15. Abdurabuh, A., Hamid, M. D., Che Hassan, C. R., & Fatani, M. I. (2024). Evaluating the Impact of Hospital Accreditation on Patient Safety Culture in Saudi Arabia Healthcare Facilities. Journal of Multidisciplinary Healthcare, 5021-5033.
16. Magadi, J. P., & Magadi, M. A. (2022). Ethnic inequalities in patient satisfaction with primary health care in England: Evidence from recent General Practitioner Patient Surveys (GPPS). PloS one, 17(12), e0270775.
17. Nurmeksela, A., Mikkonen, S., Kinnunen, J., & Kvist, T. (2021). Relationships between nurse managers' work activities, nurses' job satisfaction, patient satisfaction, and medication errors at the unit level: a correlational study. BMC health services research, 21(1), 296.
18. Chan, A. P., Guan, J., Choi, T. N., Yang, Y., Wu, G., & Lam, E. (2023). Improving safety performance of construction workers through learning from incidents. International journal of environmental research and public health, 20(5), 4570.
19. Wang, Y., Qiu, X., Zhang, Y., Li, R., Sun, Z., & Li, Q. (2024, October). The congruence and interrelationship: a dyadic perspective on the subjective cognitive impairment in the patients with colorectal cancer and their spousal caregivers. In Seminars in Oncology Nursing (Vol. 40, No. 5, p. 151717). WB Saunders.
20. Newman, C. (2022). Positive risk-taking in intermediate care: a study of risk-related decision making in occupational therapy. University of Northumbria at Newcastle (United Kingdom).

21. Amosa, T. I., Izhar, L. I. B., Sebastian, P., Ismail, I. B., Ibrahim, O., & Ayinla, S. L. (2023). Clinical errors from acronym use in electronic health record: A review of NLP-based disambiguation techniques. IEEE Access, 11, 59297-59316.
22. Watson, B. M., & Wu, X. I. (2023). Sentinel events and miscommunication what do we know in 2021: a language and social psychology framework. Health Communication, 38(9), 1770-1779.
23. Türkoğlu, B., & Sakallı, N. (2023). Is it hard-won and easily lost in Turkey, too? A replication of Precarious Manhood Theory in a Different Cultural Context.
24. Kennedy, S. R. (2022). Digital Dating Abuse and Adolescent Mental Health: A Mixed Methods Study (Doctoral dissertation, Johns Hopkins University).
25. Sachdeva, A., Garden, J., Ghidinelli, M., Louridas, M., Moffatt-Bruce, S., & Yule, S. 8T Meet the Expert. www. amee. org sc031618, 676.
26. Yan, L., Karamchandani, K., Gaiser, R. R., & Carr, Z. J. (2024). Identifying, understanding, and minimizing unconscious cognitive biases in perioperative crisis management: A narrative review. Anesthesia & Analgesia, 139(1), 68-77.
27. Faries, M. D., Kephart, W. C., & Graham, D. (2024). The intention–behavior gap. In Lifestyle Medicine, Fourth Edition (pp. 272-283). CRC Press.
28. James, K. A., Stromin, J. I., Steenkamp, N., & Combrinck, M. I. (2023). Understanding the relationships between physiological and psychosocial stress, cortisol and cognition. Frontiers in endocrinology, 14, 1085950.
29. Alahmadi, L. (2025). Team decision-making through English as a medium of professional medical communication in doctor-doctor meetings in a Saudi hospital: a multimethod discourse approach (Doctoral dissertation, University of Reading).
30. Guzman, L. E., Fite, K. M., Frank, H. E., Martinez, R. G., & Bridges, A. J. (2025). Understanding treatment barriers for Major Depressive Disorder in the Latino community: A qualitative study stratified by language preference. Transcultural psychiatry, 13634615251359457.
31. Jamshidi, H., Hemmati Maslakpak, M., & Parizad, N. (2021). Does problem-based learning education improve knowledge, attitude, and perception toward patient safety among nursing students? A randomized controlled trial. BMC nursing, 20(1), 70.
32. Hartman, R., Moss, A. J., Jaffe, S. N., Rosenzweig, C., Litman, L., & Robinson, J. (2023). Introducing Connect by CloudResearch: Advancing online participant recruitment in the digital age.