Supplementary File

Appendix 1. Questionnaire development

A questionnaire was developed based on the literature review to assess why medical errors are not reported. First, the face and content validity of the questionnaire was confirmed considering experts' opinions (three nurse experts, four health service management professors, one epidemiologist, and two hospital executive staff). Next, we were requested from experts to respond to the questionnaire to assess the instrument regarding the clarity, concreteness, centrality, importance, and content validity of each item using a 4-point rating scale. Next, we continued the rounds until 70 percent agreement was reached. Then, the Content Validity Index (CVI) was used to estimate the content validity quantitatively. The Scale CVI for the questionnaire was 0.95.

Meanwhile, we edited questions' face validity based on the experts' opinions. For reliability, the questionnaire was distributed among 20 nurses two times after a two-week interval. In both times, the questionnaire was correlated with an 81% confidence. The questionnaire was comprised of two parts. The first part included seven questions enquiring about demographic information. The second part contained 34 questions in six domains, six items about managerial factors, ten items to assess the consequences of reporting errors, six items asking about education, five items about motivation, and seven items related to the error-reporting mechanism. Each item was rated on a five-point Likert-type scale ranging from one (strongly agree) to five (strongly disagree); in this way, the process of coding and tabulation of questions was straightforward and left no room for rater subjectivity. Meanwhile, additional reasons for not reporting medical errors, preferred type of reporting system, and level of the tendency to disclosure errors to the patient were inquired via open-ended questions.

Questionnaire for Reporting of errors

Dear participant

The present questionnaire has been developed to "identify the factors influencing the failure to reporting errors by the clinical staff."

The questionnaire including 34 questions. Please answer the questions; if you completely agree (**CA**) with questions, you choose **CA**, if you agree (**A**), you choose **A**, if you do not have a specific comment (without idea), you choose **WI**, if you disagree (**D**) with the questions, you choose **D** and finally if "completely disagree (**CD**) you choose **CD.**

At the end of the questionnaire, the question was answered openly. So please, if you have other comments or ideas, Write to us.

Many thanks for your time and consideration; we guarantee your answers will be confidential.

Demographics information

Age ……

Gender: ☐ Male ☐ Female

Working shift: ☐ Fixed ☐ Inflow

Marriage Status: ☐ Single ☐ Married ☐ Other

Level of education: ☐ Bachelor ☐ Master ☐ PhD

Workplace: ☐ Surgical unit ☐ Medical unit ☐ Critical care unit ☐ Emergency unit

Name of hospital……..

NO	QUESTIONS	CA	A	WI	D	CD
1.	There is no appropriate relationship between personnel and managers; therefore, reporting the error will become a problem and do not get results.					
2.	Reporting the error does not have an appropriate reaction from the head nurse/ nursing director.					
3.	After reporting the error, one person is realized as delinquent and will be accounted responsible in all related aspects even if not be.					
4.	The concentration of chief is on the person who makes mistakes, and they do not pay any					

	attention to the other related factors.					
5.	The reaction of the chief does not proportion to the severity and importance of the error.					
6.	The chief does not have much emphasis on reporting errors.					
7.	Due to specifying or reporting the error, maybe the chief (head nurse/matron) blame me.					
8.	Due to reporting the error, maybe my annual evaluation is affected.					
9.	Due to reporting the error, maybe my salary (fee-for-service) be diminished.					
10.	Due to specifying or reporting the error, maybe the physicians blame me.					
11.	Due to specifying or reporting the error, maybe I will be expelled.					
12.	Due to specifying and reporting the error, maybe my colleagues to quote this news everywhere.					
13.	Due to reporting the problem, I feel I do not have enough competency and ability, which can diminish my confidence.					
14.	I would embarrass if the patient finds out, I have made a mistake in caring for issues.					
15.	Due to reporting the error, the personnel are not supported properly.					
16.	I am afraid of the legal liability after reporting an error.					
17.	The dearth of information about reporting methods will cause not to report errors.					
18.	I do not have any training about patient safety and medical errors.					
19.	I think with appropriate education, it is possible to minimize errors and maximize reporting.					
20.	Many errors that occur at the hospital are not important and do not need to report.					
21.	Often the definition of error is not clear for me; at this time, I cannot clearly distinguish that it is an error and should report or not.					
22.	I will not report the error if I aware it before happening.					
23.	Reporting error is a head nurse's duty.					
24.	Because the process of treatment is complicated, the physician should report it (Reporting error is the physician duty).					
25.	Under a heavy workload, I do not have sufficient time to perform even my tasks. So, reporting error is not an essential activity compare with other tasks.					
26.	I sometimes forget to report the error.					
27.	Occasionally, I reported an error, but it did not matter for my chief.					

	28.	The present error reporting system in our hospital is not efficient.					
	29.	Alongside voluntary reporting, there should be an active supervision system to detect errors.					
	30.	The present reporting system is time-consuming for filling.					
	31.	Lack of Confidentiality of reporting error is a problem that is repeated in our current reporting error system.					
	32.	I chose verbal reporting instead of writing one.					
	33.	I chose papers base reporting instead of an electronic one.					
	34.	What is error reporting system in your hospital? ☐Verbal reporting ☐Papers base reporting ☐ Tele-reporting ☐Electronic reporting					

Other comments:

Appendix 2. Scenarios

Case 1:

A patient (50-60 yrs) with diabetes and chronic kidney disease (CKD) was referred to the emergency department (ED) and was monitored for 24 hours in ED. She was treated with Hypertonic Glucose Vial because of low blood sugar (BS). Her BS was reported low in the next visit, so she was transferred to the General Ward for more care. The patient was alert and had no particular problem, and she had tele-ordering for intake of glucose. After hours, the patient's family complained of vomiting and loss of consciousness; a resident visited the patient and found the patient had an arrest. Immediately she underwent resuscitation, but despite intubation and intensive care, she died after a few days.

Case 2:

An inexperienced nurse transferred the patient (60-70 yrs) with liver cirrhosis, encephalopathy, and a low consciousness from the Emergency Ward to the Digestive Unit at 4 am. A breathing disorder occurred to the patient during the visit, and the recovery code was immediately declared. The CPR team arrived at the patient's bedside in about 5 minutes. The monitoring device was moved to another ward by the supervisor's order. The patient suffered from vomiting and aspiration. The suction device was delayed and could not be used due to the failure. Ambo bag was in the trolley for children but not for adults. Trolley equipment was not replaced and controlled after the resuscitation of the previous patient in the evening shift, and the patient was under CPR without a monitor .Finally, CPR succeeded.

Case 3:

On a night shift, the emergency department was crowded, and the supervisor nurse sent a nurse from another ward to ED for help. Two patients with similar names were under observation in ED. One of them, who was suspected of having appendicitis, needed to receive blood transfusion, and the other one blood reservation due to an emergency need in the operating room. The nurse in charge gave the blood bag and documenting its code number for transfusion. The nurse in charge started blood transfusion to the other patient without verifying the right patient. She did not observe the patient during blood transfusion. The patient got hematuria, and blood transfusion was stopped. The physician was informed about the patient's condition, and the necessary measures were taken. Fortunately, the patient's condition was controlled, but he did not accept to stay in hospital for treatment and left their Discharge against the physician's advice.

Case 4:

An old patient with chronic renal failure, diabetes, and hypertension was sent to Radiology Department to undergo sonography. He was admitted unaccompanied and stayed alone in a waiting room. After sonography, the physician left him alone to arrange a sonography report. Unfortunately, the patient lost his balance during leaving the bed and fell.

Case 5:

A patient is transferred to the operating room for splenectomy. She was so fat but successfully passed a bleeding surgery. After ten weeks, she came to the hospital complaining of continuous and blurry pain in her lower abdomen. The physician's assistant pulls off her abdomen sutures and told her that the pain is normal. After three days, the patient was referred to ED with a critical situation. Immediately she underwent sonography, and an external body was found in her abdomen. She was sent to the operating room again to remove the foreign body. The physician remembered he had been told the nurse at the end of the operation to see if the number of surgical gauzes was correct. At the same time, the surgical gauze in the patient's abdomen was not opaque and made an infection for a patient who got the necessary treatment.

Questions:

1. What errors did you see in this scenario?
2. Do you call these errors? Yes/No, why?
3. Do you think this error was preventable? Do you think who was responsible for the error? Who might be sued?
4. How do we prevent the occurrence of these errors?
5. If you were a nurse in this case (scenario) and someone (student, colleague) committed the same mistake to your patient, what is your responsibility, and what do you do?
6. Have you made the same errors (scenario)? What occurred to the patient? Did you report it (officially / informally/)? Didn't you report that? Yes/No, why?
7. Do you think these errors should be reported to the patients/family? Yes/No, why?
8. How should the errors be reported to patients / their families? What would be the reaction?

Appendix 3. Qualitative phase

The five hospitals were to be interviewed after the questionnaire data had been collected and analyzed. The questionnaire domains responses were summarized and sorted by the mean score to determine which nurses were to be interviewed. Nurses who reported deficient levels in at least three domains were invited to interview. Thus, the interviewees represented a well-dispersed range of hospitals. The main point in this process, we included nurses who had consent for coding their questionnaire.

Trustworthiness data

Peer checking was used to establish the credibility of the findings. Accordingly, we (ZN, FB) coded and categorized the data independently. Then, the codes and the categories which each author had generated were compared with each other. In case of any disagreement, we discussed with each other to reach a consensus. We also employed member-checking to maintain credibility. A summary of the findings was provided to several participants and asked to confirm the similarity between the findings and their own experiences. Moreover, we used audit trailing to establish the confirmability of the findings. Finally, to check the dependability of the opinions of the other people in the research team, increasing the transferability, clear explanation of the research, and complete description of research setting and participants, others were provided with familiarization with the research method and its follow-up.

Appendix 4. Average scores per each question

Questions	Mean		Std. Deviation	Variance
	Statistic	Std. Error	Statistic	Statistic
There is no appropriate relationship between personnel and managers; therefore, reporting the error will become a problem and do not get results.	54%	1%	28%	8%
Reporting the error does not have an appropriate reaction from the head nurse/ nursing director.	55%	1%	27%	8%
After reporting the error, one person is realized as delinquent and will be accounted responsible in all related aspects even if not be.	56%	13%	29%	9%
The concentration of chief is on the person who makes mistakes, and they do not pay any attention to the other related factors.	56%	.0.01	28%	8%
The reaction of the chief does not proportion to the severity and importance of the error.	54%	1%	26%	7%
The chief does not have much emphasis on reporting errors.	54%	1%	28%	8%
Due to specifying or reporting the error, maybe the chief (head nurse/matron) blame me.	52%	1%	28%	8%
Due to reporting the error, maybe my annual evaluation is affected.	54%	1%	28%	8%
Due to reporting the error, maybe my salary (fee-for-service) be diminished.	54%	1%	29%	8%
Due to specifying or reporting the error, maybe the physicians blame me.	53%	1%	29%	8%
Due to specifying or reporting the error, maybe I will be expelled.	56%	1%	27%	7%
Due to specifying and reporting the error, maybe my colleagues to quote this news everywhere.	53%	1%	31%	10%
Due to reporting the problem, I feel I do not have enough competency and ability, which can diminish my confidence.	54%	1%	29%	8%
I would embarrass if the patient finds out, I have made a mistake in caring for issues.	54%	1%	29%	9%
Due to reporting the error, the personnel are not supported properly.	54%	1%	30%	9%
I am afraid of the legal liability after reporting an error.	54%	1%	30%	9%
The dearth of information about reporting methods will cause not to report errors.	60%	1%	28%	8%
I do not have any training about patient safety and medical errors.	60%	1%	30%	9%
I think with appropriate education, it is possible to minimize errors and maximize reporting.	48%	2%	34%	12%
Many unimportant errors occur at the hospital that does not need to report.	57%	1%	29%	9%
Often the definition of error is not clear for me; at this time, I cannot clearly distinguish that` it is an error and should be a report or not.	60%	1%	28%	8%
I would not report the error if I was aware of it before happening.	57%	1%	30%	9%
Reporting error is the head nurse's duty.	57%	3%	56%	31%
Because the process of treatment is complicated, the physician should report it. (Reporting error is the physician duty)	55%	1%	30%	9%
Under a heavy workload, I do not have sufficient time to perform even my tasks. So, reporting error is not an essential activity compare with other tasks.	58%	1%	31%	9%
I sometimes forget to report the error.	58%	1%	30%	9%
Occasionally, we reported errors, but it has not essential for our chief.	57%	1%	29%	8%
The present error reporting system is not efficient.	40%	1%	29%	8%
Alongside voluntary reporting, there should be an active supervision system to detect errors.	48%	1%	32%	10%
The present reporting system is time-consuming for filling.	44%	1%	30%	9%
Lack of Confidentiality of reporting error is a problem that is repeated in our current reporting error system.	40%	1%	31%	10%
I chose verbal reporting instead of writing one.	51%	1%	33%	11%
I chose papers base reporting instead of an electronic one.	52%	2%	34%	11%

What is error reporting mechanism in your hospital?

- Verbal reporting: 2 hospitals
- Papers base reporting: 5 hospitals
- Tele-reporting: 2 hospitals
- Electronic reporting: 1 hospital

Appendix 5. Effective Factors for Non-Reporting Error (Bivariate Analysis)

variable		Managerial factor			Error consequence			Educational factor			Motivational factor			Mechanism of reporting error		
		mean	SD	P	mean	SD	P	mean	SD	P	mean	SD	P	mean	SD	P
Age	≤ 30	54.7	22.6	0.8	52.9	22.8	0.54	57.8	18.6	0.62	56.1	22.8	0.23	47.9	13.4	0.05*
	31 – 40	55.3	22.9		52.6	21.9		57.3	19.8		56.8	23.2		43.8	12.1	
	41- 50	57.4	19.2		56.7	21		54.8	18.5		56.7	19.3		49.7	12.1	
	51≥	55.1	22.5		60.7	19.2		58.3	19.5		65.8	14.5		46.1	8.5	
Sex	Female	55.9	22.3	0.13	54.1	22.3	0.28	56.4	19.4	0.01*	56.3	22.6	0.128	46.3	12.8	0.83
	Male	51.2	21		50	20.5		63.2	14.7		60.6	18.7		46.5	12.2	
Education Degree	Bachelor	54.9	22.3	0.1	53.4	22.2	0.69	57.5	19	0.12	56.9	22.2	0.53	46.4	12.6	0.62
	Master	62.1	19.2		56.8	20.4		51.9	18.6		55.5	22.5		44.8	14	
Working shift	Fix	56.5	21	0.62	55.5	20.6	0.41	56.1	20.4	0.36	57.6	22.4	0.87	45.1	11.6	0.41
	Inflow	54.7	22.8		52.6	22.9		57.8	18.3		56.3	22.2		46.9	13.3	
Ward Types	Emergency	55.1	25.5	0.3	56.9	24.5	0.96	56.8	23.6	0.09	56	31.2	0.2	46.5	13	0.26
	Intensive Care Unit	50.5	18.9		50.5	18.9		56.1	18.9		54.1	19.2		48.6	11.9	
	Medical	57.2	22.9		54.4	22.4		55.7	18.1		55.9	20.6		45.5	12.8	
	Surgery	54.9	20.6		52.3	22		60.7	18		60.3	21		46.3	12.8	
Marital Status	Married	56.8	21.5	0.19	54.4	20.9	0.96	55.8	18.3	0.25	56.2	20.8	0.43	46.3	12.7	0.62
	Single	53.5	22.9		52.6	23.5		58.9	19.8		57.5	24		46.3	12.8	
Work Experience	≤ 5	54.6	22.5	0.58	51.2	22.6	0.02	58	18.6	0.25	55.7	23.3	0.71	46.7	12.4	0.88
	6-10	53.7	23.5		53.2	22.8		57.9	19.9		57.9	24.1		45.2	13.8	
	15-11	56.2	21.1		53.5	21.8		56.8	17.9		57.1	19.6		46	11.3	
	16-20	58.1	18.7		61.7	19.7		55.4	19.8		55.3	19.6		45.1	13.4	
	21≥	62.1	20.5		55.9	16.2		51.6	18.1		59.1	14.4		47.3	9.9	

Linear Regression analysis, A p-value of <0.05 was considered significant.

Appendix 6. Nurses' Preference in Error Perception, Error Reporting and Disclosing Based on the Scenarios (Percentage)

	Perception From Error	Error Reporting		Tend To Disclosure		
		Formal	Informal	Full	Partial	No Disclosure
Scenario 1	45	20	40	0	0	100
Scenario 2	18	10	22	0	0	100
Scenario 3	95	27	40	19	81	0
Scenario 4	80	30	56	13	59	28
Scenario 5	40	40	46	50	45	0
Total (AVE)	55.6	25.4	40.8	16.4	37	45.6