

# Patients' knowledge, awareness, and attitude regarding patient safety at a teaching hospital, Riyadh, Saudi Arabia

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## ABSTRACT

**Aims:** Our primary objective is to investigate the baseline status of patients' awareness, knowledge, and attitudes to patient safety. The secondary objective of this research is to determine factors that influence patients' knowledge regarding patient safety. **Methods:** We performed a cross-sectional study with a targeted sample of 410 patients at King Khalid University Hospital, Riyadh, Saudi Arabia. Self-administered paper-based questionnaires were distributed to outpatient clinics on February 2, 2019 until March 20, 2019. Finally, the data were analyzed by (SPSS). **Results:** There were 450 questionnaires distributed, and 410 were completed and returned (91% response rate). Most of the patients were below the age of 50 (77.9%), 54.8% of them were females, and almost half received higher education (54.1%). Among the respondents who are taking drugs, 21.6% do not have any knowledge about the side effects of their drugs, and 47.8% of patients said that their physicians do not tell them the side effects of their prescribed drugs. Whereas 20.7% of patients claimed that they experienced a medical error, 66.3% did not report the errors, and the reason was not knowing how to report or to whom in 54.4% of the patients. In regards of infection control, 47% of the participants misunderstood means to prevent the spread of the infections and how it could be transmitted. **Conclusion:** Patients' knowledge about patient safety need to be improved. We suggest educating the patients by providing training programs for patients, and we recommend further studies.

**Keywords:** Corona virus, infection control, medical errors, medication safety, nosocomial infections, patient safety

## Introduction

World Health Organization) WHO (defines patient safety as “the absence of preventable harm to a patient and reduction of risk of unnecessary harm associated with health care to an acceptable minimum”.[1] It also defines primary health care as:

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“a whole-of-society approach to health and well-being centered on the needs and preferences of individuals, families and communities”.[2]

All physicians, including primary care physicians, are prone to medical error, making patient safety a major concern. Improving patient safety can enhance the overall healthcare outcomes in all settings including primary healthcare. WHO recognized the importance of enhancing patient safety and launched “patients for patient safety” program aimed to engage patients and communities into all levels of health care.[3] It was estimated the

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chance of being harmed in healthcare delivery to be 1 in 300<sup>[4]</sup> and the medication error costs to reach 42 billion united state dollars/year,<sup>[5]</sup> which highlights the need for further improvement. Also, a study done by Khalil *et al.* found that most common forms of adverse events in primary healthcare settings were related to drugs and allergies.<sup>[6]</sup>

Nevertheless, a study identified potential threats to patients' safety in medical practice, as demonstrated in measuring patients' dissatisfaction. It has shown that the principal reasons for these threats were language barriers, the difficulty for patient to communicate with doctors, and the absence of detailed disclosure of both medical conditions and treatment plans.<sup>[7]</sup> Also, another study identified failure in communication as a risk factor of harm in delivering opioid substitute in community-based care<sup>[8]</sup>

Furthermore, the issue of doctor–patient interaction is also highlighted by a study addressing the importance of doctor–patient communication and how there is a deficiency in educational curriculums at medical schools. It was conducted in Saudi Arabia and has raised concerns for communication to be a significant problem to be tackled. This is especially the case when there is a highly dominant foreign medical staff in the region.<sup>[9]</sup> Moreover, another breach into patients' safety is seen in a study identifying physician burn out as a cause of medical error incidents.<sup>[10]</sup> Meanwhile, there are several studies addressing hygiene as a factor causing threats to patients' safety. In the same context, a survey concerning hand washing and gloving practice concluded that there is a lack of hand hygiene among medical staff.<sup>[11]</sup> This issue is also raised by Muller *et al.* revealing that hand hygiene compliance was only 29% in the emergency department (ED).<sup>[12]</sup> While in another study by Alshammari *et al.* found that the failure in the implementing of protocol-driven hand hygiene is the reason.<sup>[13]</sup> Considering the patient's willingness to participate in their safety, some studies demonstrated factors affecting the patients' willingness to cooperate and get involved in taking action. One of these factors is the patient's level of assertiveness. This could play a key role in affecting patient's confidence to ask health care providers to wash their hands, for example. A study found that only 25% of the less assertive patients are willing to ask their healthcare providers to wash their hands. As a result, the more assertive patients were, the more comfortable they are to request with 68%.<sup>[14]</sup> This suggests that patients need to be encouraged to participate and become proactive in enhancing the safety of their health. Further study has shown that health care provider encouragement increases patient willingness to participate.<sup>[15]</sup> Unfortunately, a study conducted in Saudi Arabia showed that there is a dramatically high percentage of 67% of the patients stated none of their health care providers has ever encouraged them to report adverse drug reactions.<sup>[16]</sup>

In the meanwhile, knowledge of patients is also essential to address in regarding patients' safety. A study conducted on patients revealed that 58% of respondent patients denied having any knowledge about medical error, while 65% expressed their desire to be disclosed about all the medical errors.<sup>[14]</sup>

Overall, these threats are present despite all protocols that are being followed by health care providers. Also, a study was conducted in Korea by Pyo J *et al.* concluded that engaging patients by survives is beneficial to identify patient safety incidents (PSIs).<sup>[17]</sup> Thus, we believe that to improve patient safety, it is essential to engage patients to take a role in ensuring their safety are being met. Therefore, this study aims to assess the level of patient's knowledge, awareness, and attitude toward patients' safety and to determine if patients are willing to collaborate to improve patients' safety in KKHU. It is decided to conduct this research in Saudi Arabia after we reviewed a similar study conducted in China.<sup>[18]</sup> These studies expose areas where the safety of patients could be threatened in the patient safety application. However, the majority of patient safety-related studies are applied to the health care providers, neglecting the vital role of the patients. Therefore, the authors decided to tackle this problem from the patient's point of view and assess their knowledge regarding patients' safety and their willingness to be involved in the improvement of their safety.

Although many studies were conducted in the field of patients' safety, only a few focused on the involvement of patients. Therefore, patients' involvement in patients' safety is seen to be crucial to improve health care. In this study, the authors aimed to assess patients' knowledge regarding patient safety in the light of understanding how to improve the safety of patients. The authors also aimed to determine whether patients are willing to participate in improving patients' safety and what are the factors that influence patients' knowledge about patient safety. This will give an idea of how we could involve patients in participating and explore why there might be a refusal.

## Methodology

This study has used a quantitative, observational, descriptive cross-sectional study in assessing patients' knowledge, awareness, and attitude toward patient safety. We used age, gender, and educational level as our study variables and patient knowledge regarding patient safety as our outcome variable.

The study was carried out in the outpatient clinics in King Khalid University Hospital in the period of February 2, 2019 until March 20, 2019, through distributing self-administered paper-based questionnaires; patients unable to respond were excluded. In outpatient clinics, it is hard to approach patients while they are leaving the doctor's clinic. Therefore, we approach them in the waiting area to achieve an optimal response from the patients.

The sample size of our study is 412 patients in a 10% nonresponse rate. We assumed a proportion of 0.58 toward the patient's lack of knowledge about patient safety, with the accuracy of the estimate is  $\pm 5$ , at  $\alpha=0.05$ , the sample size is 374. Since we supposed nonresponse to be 10%, the sample size came out

to be 410 participants. We used the following single proportion equation to calculate our sample size.

$$n = \{(Z_{\alpha/2})^2 \times p(1-p)\} \div (d)$$

$$n = \{(1.96)^2 \times 0.58 (0.42)\} \div (0.05)^2 = 374$$

Where

(Z<sub>α/2</sub>)= Normal deviate reflects the type 1 error

For 95% the critical value = 1.96

p = proportion to be estimated

d = the accuracy of estimate (how close to the true proportion)

The data were collected using self-administered paper-based questionnaires. The self-administered paper-based questionnaires were designed, discussed, and revised with three experts in patient safety. It is composed of five sections. The first part contains four questions about demographic information. The other four sections are concerned with patient safety. In the first section, the data collected are name, age, gender, education level, and the unit patient is visiting. The second section is concerned with medical errors. It is composed of four questions that assess patients' knowledge and attitude regarding adverse medical events. The third section is concerned with medication safety. It is composed of three questions about medical errors. The fourth section is composed of six questions that assess patients' knowledge about nosocomial infections. The fifth section is composed of four questions that assess patients' willingness to participate in multiple patient safety situations.

A pilot study was carried out to test the questionnaire's questions and the time required to complete all items. This was carried out by distributing a paper-based questionnaire to 30 patients. We collected 50% of whom were males, and 50% were females. The patients commented that the questionnaire was clear and understandable. However, regarding the second question of the second section, patients misinterpreted the question. To avoid any further misinterpretation, we rewrote the questionnaire and made it more apparent. On average, the questionnaire was completed in around 10–15 min.

In data analysis, Microsoft Excel 2013 was used to input all the data, which was checked by two investigators separately. SPSS 24.0 version statistical software was used to analyze all the baseline data, including the number of participants, gender, education, and age, and the average score of each item on the questionnaire. The Wilcoxon test was used to analyze the statistical differences in responses in questions with a three-Likert scale; Chi-square test was used to analyze the statistical differences in nominal data; the threshold of significance was set at α = 0.05. Descriptive statistics mean, standard deviation, frequencies, and percentages are used to describe the quantitative and categorical variables.

Nevertheless, we have considered four main ethical issues in our study and are as follows:

1. No incentives or rewards will be given to participants. Snacks or refreshments may be provided to establish a bond with participants with no obligation to participate
2. There is no conflict of interest in this study
3. There is no funding for this research
4. Ethical committee approval from king khalid university hospital King saud University, College of Medicine was taken on November 29, 2018. ref. no. 305□b20-2018-19
5. Consent was taken from the participants.

## Results

In this study, there were 450 questioners disrupted and 410 were completed and returned with a 91% response rate. Most of the patients were below the age of 60 (87.5%), Females were 54.8%, and almost half received higher education (54.1%) [Table 1].

### Medical errors and medications safety

A total of 21.6% of patients do not know the side effects of the drugs that they are taking, and 47.8% of patients were not informed by their physicians about the side effects. Whereas 39.5% of patients answered yes when they were asked whether they think a medical error always causes medical complications, 20% of patients claimed that they have experienced at least one medical error and when they were asked about the type of error experienced, their answers were as follows: 11.3% Administrative error, 8.8% communication error, 36.3% diagnostic error, 1.3% documentation error, 30% surgical or procedural error, and 12.5% medication error. The fact 66.3% of the patients did not report errors, and when they were asked for a reason, 54.4% said that they did not know how to report or to whom. There are 41% of those who reported errors stated that they reported the errors because they wanted to prevent the error from reoccurring. In total, 31% wanted compensation and 27.6% wanted the physician that made the error to get punished. Although most of the patients did not report the errors, an overwhelming majority of patients (94.4%) think that reporting errors can reduce the chance of reoccurring in the future [Table 2].

### Nosocomial infections and infection control

The majority of patients (70.5%) think that there is no chance to get nosocomial infections with proper sterilization techniques. In total, 24.4% of patients believe that Hospital-acquired infections occur only for those who undertake surgical procedures. When

**\*Table 1: Demographic data**

Variable		Count(%)
Gender	Male	185 (45.12)
	Female	225 (54.88)
Educational level	College degree and above	222 (54.15)
	Below college degree	188 (45.85)
Age	60 and above	51 (12.44)
	Below 60	359 (87.56)

**Table 2: Questioner responses representing patient knowledge about patient safety [n(%)]**

Item	Responses		
	Yes	no	
1- Do you think that every treatment complication is a medical error?	163(39.75)	247 (60.25)	
2- Do you think that reporting the errors can reduce the chance of it to happen in the future?	387 (94.39)	23(5.61)	
3- Do you think that there is zero chance to get nosocomial infections with proper sterilization techniques?	289(70.48)	121(29.52)	
4- Do you think that Hospital acquired infections happens only for those who gone through surgeries?	100(24.39)	310(75.61)	
5- Do you think that patients who are coughing or sneezing should wear a mask to avoid spread of germs?	377(92.17)	32(7.83)	
6- Would you ask your physician to wash his/her hands before examining you?	96(23.47)	313(76.52)	
7- If you thought an error had occurred in your care, would you notify your doctor about that?	381(92.93)	29(7.07)	
Item	Responses		
	A lot	some	Not at all
8- How much do you know about medical errors?	79(19.27)	289(70.49)	42(10.24)
9- How much do you know about medication adverse events?	117(28.55)	258(62.92)	35(8.53)
10- How much do you know about your drug side effects?	54(19.1)	167(59.2)	61(21.6)
11- How much do you know about nosocomial infections? *	98(23.96)	247(60.39)	64(15.64)

patients were asked about the appropriate way to prevent the spread of germs when sneezing, more than one-third of patients (38.8%) chose a wrong way (sneeze freely in the air (5.2%) or use hand to cover the mouth (33.4%)) and 61.3% chose the proper way (use sleeve to cover their mouth). We proposed a question to our participants to get their opinion on where a patient with corona virus respiratory syndrome should be kept. And only half of the responses (53%) knew that such conditions should be kept in an isolation room.

### Patients' collaboration

A total of 76.52% patients haven't ever asked their physician to wash their hands before the examination. In addition, 58.6% said that they would be more willing to notify their physicians if they thought an error had occurred if were encouraged to do so. Only 7.1% said that they would not notify their doctor even if they were encouraged to do so [Table 2].

### Impact of age, gender, and education on knowledge of patient safety

There was a considerable difference in the knowledge about patients' safety in different age groups. Older patients appeared to have more knowledge about their drug side effects ( $X^2 = 5.92$ ,  $P < 0.014$ ) and more knowledge about adverse medication events ( $X^2 = 8.44$ ,  $P < 0.003$ ) in comparison to those who are younger. Nevertheless, it is not surprising to see a definite pattern between education level and knowledge of patients' safety. Those who received a high education had more knowledge in many aspects of patient safety, including adverse medical events ( $X^2 = 6.063$ ,  $P < 0.014$ ), ( $X^2 = 9.664$ ,  $P < 0.008$ ) when compared with standard education.

## Discussion

Efforts of WHO aiming to improve patients safety are noteworthy.<sup>[19]</sup> For instance, they launched three technical reports providing valuable information about medication safety

in transitions of care, polypharmacy, and high-risk situations.<sup>[20]</sup> However, relevant studies in Saudi Arabia targeting patients are lacking. In a study published by Alenezi A *et al.* aimed to assess the perception of clinical practitioners in terms of their hospital's patient safety culture. Also, they analyzed the work-related predictors of perceptions of patient safety culture. They highlighted the critical need for strengthening hospitals culture regarding patient safety.<sup>[21]</sup> In addition, another study by Alzahrani N *et al.* aimed to investigate the attitude of physicians and nurses to patient safety in the EDs of two hospitals in Saudi Arabia has found their safety attitude to be weak.<sup>[22]</sup> Nonetheless, most of the available studies have targeted healthcare providers rather than the patients themselves. Therefore, the current study was directed to the patients and it aimed to assess their knowledge, attitude, and practice in patient safety. We found a deficiency in error reporting (66.3%) of which 54.4% of patients did not know how to report. Likewise, another study in Saudi Arabia conducted by Alsafi E *et al.* found that 49% of physicians would not report the error if it did not cause any harm.<sup>[23]</sup> In terms of medication safety, essential knowledge of patients about their medications was found to be lacking, of which poor counseling was claimed to be the reason by 47.8% of patients. Nevertheless, medication errors have raised a global burden estimated by 42 billion USD.<sup>[24]</sup> In that context, a paper published by Alsulami *et al.* revealed that 43.4% of healthcare providers do not have a clear definition of medication errors,<sup>[25]</sup> suggesting that patients' knowledge is a continuum of their healthcare providers. Therefore, and starting 2017, the WHO has aimed to reduce the "medication-related errors" to half in 5 years.<sup>[26]</sup> In the same context, a study conducted by Wittich CM *et al.* suggests several factors that precipitate medication errors. One of which are medication factors such as similar pronunciation and low therapeutic index. In addition, patient factors were identified, such as poor renal or hepatic function, impaired cognition, polypharmacy. Also, factors related to health care providers were acknowledged as the use of abbreviations and cognitive biases.<sup>[27]</sup> In regards of nosocomial infections and infection control, although many viruses such as SARS-COV-2

are thought to be transmitted through air droplets,<sup>[28]</sup> more than one-third of the patients chose to sneeze freely in the air. In the same context, 47% of the participants misunderstood means to prevent the spread of the infections and how it could be transmitted in healthcare centers. In addition, a study by Albishi *W et al.* found that around one-third of physicians had poor knowledge regarding surgical site infections.<sup>[29]</sup> Again, this points to patients' knowledge being influenced by the physicians. From patients' collaboration perspective, most of patients were not involved in the health care delivery process. This was expressed in the basic physician–patient interaction in terms of hygiene, such as hand washing.<sup>[30]</sup>

Moreover, even if physicians did not wash their hands, majority of patients (76.5%) declared that they would not remind their physicians to do so. A significant factor contributing to patients' collaboration was the physicians' encouragement; the findings of the current study suggest that it is beneficial to engage patients by giving them a role in the process of healthcare delivery to improve patients' safety. Additionally, efforts should be made to raise public awareness which will make patient more knowledgeable about patients' safety and be better able to help reduce medical errors.

## Conclusion

According to our results, patients' knowledge about patient safety needs to be improved. We suggest educating the patients by providing training programs for patients, and we recommend patients' centered community-based studies.

## Limitations

This study was conducted in one teaching hospital, which may not reflect the targeted population. Although three patient safety' experienced consultants approved our questionnaire, some of the questions were subjective.

Despite these limitations, we think that this is the first patients targeting survey in Saudi, and we believe that our findings provide former evidence for improving patient safety and also endue a better understanding of the current status of the patient for patient safety in Saudi Arabia.

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## Conflicts of interest

There are no conflicts of interest.

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