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# Assessing the Level of Knowledge Regarding Medication Errors among Nurses in Karachi, Pakistan

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## ABSTRACT

One of the key elements influencing hospital service quality and decreasing patient safety in healthcare systems is medical error. In the healthcare industry, medication errors are a frequent source of harm and fatalities. **Objective:** To assess the level of knowledge among nurses regarding medication errors. **Methods:** This cross-sectional study was conducted in a tertiary care hospital in Karachi among 120 nurses from January 2024 to March 2024. Participants were selected through a convenient sampling technique. The sample size was calculated by open EPI softer by taking into consideration a 95% confidence level and a 5% margin of error. The data were entered and analyzed by Statistical Package Social Sciences software version 26. **Results:** According to the study results, 14 (12%) of the participants had a low level of knowledge, and 37 (31%), had a moderate level of knowledge. while 69 (57%) had a high level of knowledge regarding medication errors. **Conclusions:** This study concluded that most of the nurses had a high level of knowledge regarding medication errors.

## INTRODUCTION

Errors in medication administration occur when a patient receives a different prescription than what his doctor suggested [1]. One of the primary elements influencing hospital service quality and decreasing patient safety in healthcare systems is medical mistakes (MEs). Sometimes they can result in mortality, particularly in underdeveloped countries [2]. In the healthcare industry, medication administration mistakes, or MAEs, are a frequent source of harm and fatalities. These mistakes not only jeopardize patient safety but also incur global financial costs [3]. WHO published a study on the frequency and expense of medication errors in Britain in February 2018. The study estimated that 237 million medication errors occur in Britain annually at all levels of the pharmacological procedure [4]. Preventable medication errors are responsible for between 18.7% and 56% of all adverse events among hospitalized patients. What's even more important to understand is that pharmaceutical errors can happen even when there is no patient injury. For all of these reasons and more, the World Health Organization initiated a global campaign in 2017 with the goal of halving drug errors by 50% in five years [5]. As a typical aspect of nursing practice, administering medication entails considerably more than merely psychomotor tasks. It depicts the complex interplay of multiple specific decisions and behaviors [6]. Any step of the drug administration process,

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including prescription, transcribing, dispensing, preparation, and administration, might result in medication errors [7]. Because they spend so much time administering medication and because they get orders from doctors, chemists, and hospitals regarding medication dispensing, nurses are particularly vulnerable to medications errors [8]. Initiated in 2017, the third WHO challenge sought to secure a global commitment to cut the incidence and severity of medication-related harm by half during the following five years. To reach this objective, it is essential to determine all obstacles to reporting pharmaceutical errors [9]. Medication errors are a significant concern globally, The structural equation modeling analysis showed a positive significant correlation between medical errors (MEs) and psychological and functional factors, whereby excessive workload, complexity of tasks, stress, sleep deprivation, and fatigue were found to be predictors of MEs occurrence [10]. A study conducted in Quetta, Pakistan determined that documentation errors were the most prevalent medication errors observed in patients with kidney disease. Forgetfulness and duty shift were associated with documentation errors, whereas inattention was linked to prescribing and dispensing errors. The significant risk factor for medication errors was found to be a high number of prescribed medications [11]. Medication mistake is a significant problem in the healthcare sectors around the globe. It is a key component that leads to poor patient outcomes. Ultimately, the health of the patient will be directly impacted [12].

Considering the importance of vigilance in medication administration, this study aimed to assess the knowledge of nurses regarding medication errors.

## METHODS

In Karachi, Pakistan, at the Tertiary Care Hospital, a descriptive cross-sectional study was carried out from January to March 2024. Furthermore, 120 nurses both male and female working in different units were selected through a non-probability convenient sampling method. The optimal sample size was 120 and this was determined by open EPI calculator version 3.0, taking into account a 5% margin of error and a 95% confidence level with population size (for finite population factor correction factor or FPC) (N): 172. Before collecting data, the principal investigator received authorization and approval having reference number SSNHS/748/23 from the head of the department of Civil Hospital Karachi for the research. The goal of the study and the participant's rights to decline or withdraw from the study at any moment were all explained to the participants. Moreover, prior informed consent was taken from each participant in both Urdu and English. An open-access adopted questionnaire developed by Santos Karina (2020) [13] and informed consent were provided to the participating nurses. The inclusion criteria were the nurses (male and female) working in the civil hospital Karachi having valid PNC license and were willing to participate in the study and the exclusion criteria were nurses' refusal to participate in the study, absence at the time of data collection, and incomplete forms. A two-part questionnaire consisting of demographic information and questions related to knowledge regarding medication errors was used for data collection. The demographic part has five while the knowledge has 10 questions. While scoring each right answer carries one mark, zero was given to the wrong ones. There was a maximum score of 10 and a minimum score of 0. A percentage was computed based on the overall score. Participants' knowledge of medication error was rated as poor by those with a score below 50%, as moderate by those with a score between 50% and 75%, and as high by those with a score above 75%. The Statistical Package for Social Sciences (SPSS) version 26.0 was used to enter and analyze the data. To assess the knowledge of nurses regarding medication error frequency and percentage were calculated.

## RESULTS

Table 1 shows the distribution of demographic variables of study participants. It has been noted that 43 (36%) subjects belonged to the 23-30 age group, 41 (43%) belonged to the 31-40 age, 29 (24%) belonged to the 41-50 age group and 7 (6%) belonged to the 50 above age group. 54 (45%) subjects were female, while the remaining 66 (55%) were male. 28 (23%) have the professional qualification of a Diploma in general nursing 30 (25%) have a BSN and 62(51%) Post RN. 33 (27%) subjects have less than 03-year professional experience, 17 (14%) has 3-6 years professional experience while remaining 70 (58%) has more than 06 years professional experience. The area of practice of most participants was in the general wards 95 (79%) while 25 (21%) had an area of practice in critical areas.

**Table 1:** Distribution of Demographic Variable among study participants

| S. No. | Characteristics | Frequency (%) |
|---|---|---|
| **Gender** | | |
| 1 | Male | 66 (55%) |
| | Female | 54 (45%) |
| **Age** | | |
| 2 | 23-30 | 43 (36%) |
| | 31-40 | 41 (43%) |
| | 41-50 | 29 (24%) |
| | >50 | 7 (6%) |
| **Qualification** | | |
| 3 | Diploma | 30 (25%) |
| | GBSN | 62 (51%) |
| | Post RN | 33 (27%) |

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| | | |
|---|---|---|
| **Working Area** | | |
| 4 | Critical | 25 (21%) |
| | Non-Critical | 95 (79%) |
| **Experience** | | |
| 5 | <3 Years | 33 (27%) |
| | 3-6 Years | 17 (14%) |
| | > 6 Years | 70 (58%) |

Table 2 shows the level of nurses' knowledge regarding medication errors. This table shows that 14 (12%), had a low level of knowledge, and 37 (31%), had a moderate level of knowledge, while 69 (57%) had a high level of knowledge regarding medication errors.

**Table 2:** Level of Knowledge among study participants

| Level of Knowledge | | |
|---|---|---|
| **S. No.** | **n= 120** | **Frequency (%)** |
| 1 | Low Level of Knowledge | 14 (12%) |
| 2 | Moderate Level of Knowledge | 37 (31%) |
| 3 | High Level of Knowledge | 69 (57%) |
| Total | | 120 (100%) |

## DISCUSSION

A significant amount of medication is given to patients daily in every area of the health care system. Medication mistakes are particularly frequent in this procedure and are a leading global source of harm and fatalities [14]. The present study's findings indicate that most subjects were male, with a mean age between 20 and 30 years. These results are not line with a study by Khan *et al.*, (2023) that was carried out in Pakistan and revealed that 125 (62.1%) of the participants were female and had a mean age of 20 to 30 years [15]. The present study findings show that 28 (23%) have the professional qualification of a Diploma in general nursing 30 (25%) have a BSN and 62(51%) Post RN. 33 (27%) subjects have less than 03-year professional experience, 17 (14%) has 3-6 years professional experience while remaining 70 (58%) has more than 06 years professional experience. The area of practice of most participants was in the general wards 95 (79%) while 25 (21%) had an area of practice in critical areas. Conversely, research carried out in Saudi Arabia by Alandajani et al., in 2022 revealed that the majority of participants (68.4%) had a generic BSN and that they were from non-critical areas [16]. The differences in qualifications, clinical experience, and practice areas may be due to variations in educational systems, healthcare infrastructure, and job market demands. Knowledge of medication errors is very significant for reporting medication errors. If nurses and other healthcare providers have adequate knowledge of medication errors. they can play a pivotal role in preventing medication errors and as a result, can impede injuries occurring due to medication errors. The findings of the current study indicate that the majority of the nurses 69 (57%) had a high level of knowledge, while 14 (12%), had a low level of knowledge, and 37 (31%), had a moderate level of knowledge, regarding medication errors. These results are consistent with Iffat *et al.'s* study, which found that the knowledge of healthcare professionals was sufficient [17]. The finding aligns with the previous research conducted by Johnson *et al.*, in Ajman, UAE, which showed that Iranian nurses, had a good understanding of medication errors [18]. Additionally, the result is different from the previous research conducted in Medina, Saudi Arabia by Abdellatif *et al.*, which found that healthcare professionals, including doctors, chemists, and nurses, had insufficient knowledge regarding drug errors [19]. Moreover, it was found in research conducted by Alenezi AM and Baker OG, knowledge influences attitude, as nurses who have a deep understanding of the subject matter are more likely to have positive attitudes towards their patients, their colleagues, and their work [20]. Also, the findings of another study carried out in Pakistan indicated that final-year MBBS students, nurses, and doctors had poor knowledge regarding medication errors and needed to improve [15].

## CONCLUSIONS

The findings revealed that most of the participants (nurses) had a high level of knowledge regarding medication errors. Moreover, the findings showed that 14 (12%) of the participants (nurses), had a low level of knowledge, and 37 (31%), had a moderate level of knowledge. while 69 (57%) had a high level of knowledge regarding medication errors.

### Authors Contribution

Conceptualization: AA, SK
Methodology: A, AA, ZU, AJS, SU, MI[1], MI[2]
Formal analysis: SK, AB
Writing, review, and editing: AA, SK

All authors have read and agreed to the published version of the manuscript.

### Conflicts of Interest

The authors declare no conflict of interest.

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