

Moral and Ethical Sensitivity as Predictors of Nurses' Attitudes Towards Medication Errors

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Abstract

Background: Moral and ethical sensitivity are the foundation and cornerstones of nursing care that enable nurses to take care of their patients effectively and ethically. On the other hand, medication administration errors are considering a major threatening factor for patient's safety. So, nurses should have high levels of moral and ethical sensitivity to take the best decisions for patients and therefore, play a key role in promoting ethical values and decreasing medication administration errors' rate. The present study aimed to assess moral and ethical sensitivity as predictors of nurses' attitudes towards medication errors at Al-Ahrar Teaching Hospital, Sharkia Governorate, Egypt. For this research, a descriptive correlation design was used. A simple random sample of 280 nurses was chosen from the above mentioned setting. To fulfill the purpose of this study three tools were used in data collection, moral sensitivity questionnaire, ethical sensitivity questionnaire and scale of attitudes towards medical errors. **Results** showed that 77.5 % of nurses had a high level of moral sensitivity. However, 55.8% of them had a moderate level of ethical sensitivity. Likewise, 98.9% of them had a positive attitude towards medication errors. Furthermore, there were significant and positive correlations between nurses' attitudes towards medication errors as regards their moral and ethical sensitivity, where p -value < 0.001 . **Conclusion:** Moral and ethical sensitivity were significant predictors of nurses' attitudes towards medication errors. **Recommendations:** Ethical issues should be incorporated during both school education and in-service training programs after graduation. Hospital administrators should focus on handling moral conflicts in constructive ways, not by trying to erase the problem. Head nurses should guide and direct health team to develop strategies to reduce and prevent medication administration errors.

Key words: Moral Sensitivity, Ethical Sensitivity, Attitude toward Medication Error, Nurses

Introduction

Recent advances in medicine and an increasingly demanding healthcare environment are causing various complicated ethical problems. Therefore, healthcare professionals are required to have a high ethical capability. Nurses, as healthcare professionals, must have a high level of genuine ethical skills and respect the standards and rights of patients who need their care. Nurses who practice ethical mindfulness will consider patients' reactions and feelings, as well as their potential acts (Yeom et al., 2017; Muramatsu et al., 2019). Ethics is defined as a set of moral values or ethical principles that regulate the behavior of an individual or an occupation (Tural et al., 2015). Additionally, ethics look for the best way of caring for patients as well as the best nursing function (Suhonen et al., 2018).

Moral sensitivity is an ethical skill in the healthcare field; it requires that nurses must be skilled in moral decision making and in the management of diverse ethical issues in clinical settings (Borhani et al., 2015). Proper moral

sensitivity not only functions to resolve ethical dilemmas or justify actions, but also, serves to prevent ethical dilemmas and conflicts (Ertug et al., 2014). Moral sensitivity can be defined as nurse's ability to recognize moral conflicts, grasp the patient's vulnerable state situation ally and intuitively, and understand the consequences of healthcare decisions (Lee & Kim, 2020).

In order to make ethical decisions, nurses must be able to recognize a moral conflict and be sensitive to the patients' vulnerable situation (Dalla-Nora et al., 2017). In addition, moral sensitivity is used to describe the capacity and ability of nurses in the process of ethical decision making, it enables them to make a moral decision for patients (Amiri et al., 2020). Having a capacity to resolve and dealing with moral conflicts is essential for providing high quality of nursing care (Pavlish et al., 2016). Moreover, if moral conflicts cannot be resolved, it can affect the nurses' ability and can negatively impact on the quality of nursing care (Joan & Settimio, 2018).

There are six components of moral sensitivity as follows: Reliance on medical authority (patient-oriented care) is the first component and it focuses on maintaining a trusting relationship with the patient and finding ways to respond to their needs. Modifying autonomy (professional responsibility) as a second component refers to personal convictions and beliefs about acting professionally, avoiding conflicts of interest, and putting the interests of patients ahead of personal desires as ethical obligations. Moral meaning is the third component and it refers to the process of reflection in structuring a moral connotation for decisions and acts, even if it may restrict the patient's autonomy. Moral conflict experience as a fourth component requires identifying a possible or real moral dilemma before expressing moral sensitivity, while acting and considering emotions, intuition, and cognitive knowledge of a moral question about what to do. Expressing benevolence is the fifth component and it refers to a moral motivate to do well or act in the patient's best interests. Interpersonal orientation is the last component and it focuses on building a relationship of trust with the patient and finds ways to respond to their needs (**Alnajjar & Abou Hashish, 2021**).

Determining and adopting the existence of an ethical issue requires ethical sensitivity that can be defined as the ability to be aware of the existing ethical problems and to determine the importance of this situation in terms of individuals. It includes caring for the ethical dimension of the events, identifying ethical issues, and making ethical decisions competently (**Muramatsu et al., 2019**). Ethical sensitivity requires that nurses should be able to interpret and be aware of the verbal or nonverbal clues and behaviors of patients in order to determine their needs that could be physical and emotional, and should consider this when caring for them. The nurses with ethical sensitivity can interpret a situation from other points of view, show sensitivity to the feelings and reactions of patients and listens carefully (**Ertuğ et al., 2014**).

On the other hand, if nurses do not have the necessary competence that is based on a scientific knowledge, moral and ethical sensitivity, and the ability to protect patients'

health and life, medical errors become inevitable (**Korhan et al., 2017**). Medication Errors (MEs) are of the famous medical errors that could occur for patients during hospitalization. Therefore, it is one of the major concerns of the healthcare team professionals worldwide. Additionally, MEs are mistakes associated with healthcare that is provided for the patients. As a result, patients receive healthcare incorrectly, and it may become fatal at times (**Johnson & Thomas, 2013**).

The MEs referred to any avoidable events that may result in inappropriate medication usage or patients' harm while the medication under the control of a healthcare provider, patient, or consumer. Such events may be related to professional practices, healthcare products, procedures, and systems; including prescription writing, order communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use (**Goedecke et al., 2016; NCCMERP, 2019**). Additionally, ME considered a major threatening factor for patients' safety. As well, it is a harmful situation and serious event that could happen to the patients during hospitalization. It might result in negative outcomes such as, a higher mortality rate, a longer hospital stay, and higher medication expenses (**Mayhob & Hashim, 2017**).

There are numerous variables that could contribute to MEs, including ignorance, negligence and increase the gap between evidence and action; in which nursing care competences are not based on scientific background. According to several studies, almost 10% of hospitalized patients suffer from harmful effects brought by healthcare team interventions during hospitalization around the world (**Mayhob & Hashim, 2017**). Drug administration and management are integral part of the nurse's role; nurses spend up to 40% of their time administrating drugs. Therefore, ME persistent problems associated with nursing practice. In this context, in order to lower MEs; the trust between nurse and patient should be established and increase the trust to therapy institutions, and determination of attitudes of nurses in MEs carries a big importance. Nurses should know the importance of recognizing the moral and

ethical sensitivity through their values, attitudes and knowledge, as well as, they must be prepared to face the ethical problems (Noland & Carmack, 2015).

Significance of the study

It is estimated that any given patient is exposed to at least one medication error per day and that medication errors account for 100,000 hospitalizations each year (Budnitz et al., 2006). Additionally, 6-7% of inpatients are exposed to MEs daily, the majority of such patients are in long term care and/or admitted to intensive care unit, which is a high complexity context where drug administration often requires a large number of interventions from healthcare personnel (World Health Organization, 2016). Therefore, MEs is a significant problem within the healthcare community and may be underreported or not reported due to a variety of factors such as; personal perceptions, fear, and misunderstanding of what constitutes an error (Saleh & Barnard, 2019). In this context, in order to lower MEs rate nursing discipline requires every nurse to possess moral and ethical sensitivity to provide both moral and high quality of care, deal with and resolve moral conflicts and provide adequate and scientific services to care receivers (Udomluck et al., 2010).

Although, few studies were conducted to study the attitudes towards medication errors in Egypt, not a study was conducted to examine moral and ethical sensitivity as predictors of nurses' attitudes towards medication errors at Al-Ahrar Teaching Hospital. Hopefully, the results of this study will help fill in the gap in understanding the effect of moral and ethical sensitivity on nurses' attitudes towards medication errors. This could lead to positive outcomes for healthcare receivers such as lower medication errors, greater nurses' and patients' satisfaction, and greater trust between nurses and patients.

Aim of the study

The present study aimed to assess moral sensitivity and ethical sensitivity as predictors of nurses' attitudes towards medication errors at Al-Ahrar Teaching Hospital.

Research questions

1. What is the level of nurses' moral sensitivity?
2. What is the level of nurses' ethical sensitivity?
3. What is the nurses' attitude towards medication errors?
4. Are there relationships among nurses' moral sensitivity, ethical sensitivity and their attitudes towards medication errors?
5. Is nurses' moral sensitivity a predictor to their attitudes towards medication errors?
6. Is nurses' ethical sensitivity a predictor to their attitudes towards medication errors?

Subjects and Methods

Research design

For this study, a descriptive correlational design was used.

Study setting

This study was conducted at Al-Ahrar Teaching Hospital, SharKia Governorate, Egypt that is affiliated to the Ministry of Health. The total hospital capacity was 442 beds distributed in 15 departments such as: Medical surgical units, operating rooms, critical care units, etc.

Subjects

A simple random sample of 280 staff nurses who had at least one year of experience and accepted to participate in the study were selected randomly from the above mentioned settings.

Sample size

The sample size of staff nurses was calculated at a confidence interval of 95%, margin of errors 5.0%, a total population size of 800 nurses, and by using a simplified formula provided by Yamane (1967) [$n = N / (1 + N(e)^2)$]; The required sample size was 280 nurses.

Tools of data collection

To fulfill the purpose of this study, three tools were used in data collection as follows:

Tool I: Moral sensitivity questionnaire: This tool included two parts as follows:

Part 1: Personal and job characteristics of staff nurses; this part was developed by the researchers to collect data about: Age, gender, marital status, years of experience, educational qualification, and department.

Part 2: Developed by **Lützén et al. (1997)** to assess moral sensitivity level among nurses. It included 30 items subdivided into six subscales, namely: Modifying autonomy (4 items), reliance on medical authority (3 items), moral meaning (6 items), expressing benevolence (8 items), experiencing conflict (3 items), and interpersonal orientation (6 items). The nurses' responses were measured on a five-point Likert scale ranged from strongly agree (5) to strongly disagree (1). The reliability of the tool was measured by Cronbach alpha coefficient and it was 0.93.

Scoring system

The total score of this tool ranged from 30–150. Scores ≥ 108 indicated a high level of moral sensitivity, scores 65–107 indicated a moderate level, and scores < 65 indicated a low level.

Tool II: Ethical sensitivity questionnaire for nurses: Developed by **Muramatsu et al. (2019)** to assess ethical sensitivity level among nurses. It included 13 items subdivided into three subscales, namely: Respect for individuals (8 items), distributive justice (3 items), and maintaining patients' confidentiality (2 items). The nurses' responses were measured on a four-point Likert scale as follows: 1 = I do not think at all, 2 = I do not think much, 3 = I think a little and 4 = I think very. The reliability of the tool was measured by Cronbach alpha coefficient and it was 0.76.

Scoring system

The total score of this tool ranged from 13–52. Scores ≥ 39 indicated a high level of ethical sensitivity, scores 27–38 indicated a moderate level, and scores < 27 indicated a low level.

Tool III: Scale of attitudes towards medical errors: This tool was developed by **Gulec and Seren-Intepeler (2013)** to measure nurses' attitudes towards medication errors. It consisted of 16 items with three subscales as

follows; medical error perception (2 items), medical error approach (7 items) and medical error reasons (7 items). Items were rated on a five-point Likert scale ranged from strongly agree (5) to strongly disagree (1); while negative items (items 10 & 13) had been scored reversely. The internal consistency of this instrument was evaluated by the Cronbach alpha coefficient and it was 0.72.

Scoring system

The total scores of the scale ranged from 16–80. Scores ≥ 48 indicated a positive attitude and scores < 48 indicated a negative attitude. Positive attitude shows that nurses' awareness of medical errors and error reporting is high while negative attitude means that nurses' awareness of medical errors and error reporting is low (**Gulec & Seren-Intepeler 2013**).

Field work

Data collection took three months from the beginning of January till the end of March, 2022 during morning and afternoon shifts. The preparatory phase was done by explaining briefly the purpose of the study to the nurses. The time consumed to answer each questionnaire sheet ranged from 35 to 40 minutes.

Pilot study

A pilot study was carried out on 28 nurses (10% of the study sample) to check the clarity of the tools and to estimate the time needed to fill in the questionnaire sheets by each participant. Required modifications were done and the subjects who participated in the pilot study were excluded from the main study sample.

Content validity

Data were collected using a self-administered questionnaire, after the translation of the instrument to Arabic. The content and face validity were established by a jury of experts (five professors & assistant professors) from academic nursing staff, Zagazig University. According to their opinions all necessary modifications were done.

Administrative and ethical considerations

This study was approved by Ethics Committee and Dean of the Faculty of Nursing, Zagazig University. Approval to conduct the study was obtained from the medical and nursing

directors of the hospital and the head nurses of the departments after explaining the aim of the study. The participants were informed that their participation in the study is completely voluntary and that they have the right to withdraw from the study at any stage without giving any reason for them. The cover letter introducing the study addressed the confidentiality of the participants. Consents of participants were established with the completion of filling in of the questionnaires.

Statistical analysis

Data entry and statistical analysis were done using the Statistical Package for Social Science (SPSS), version 26.0. Data were presented using descriptive statistics in the form of frequencies and percentages for categorical variables, and means and standard deviations for continuous variables. Pearson correlation analysis was used for assessment of the inter-relationships between total scale scores. Multiple Linear inner regression analysis was used to assess the prediction effect.

Limitations of the study

Some questionnaires returned incomplete and few questionnaires sheets were not returned from nurses, so, the researcher gave them another one

Results

Table 1 clarifies that 57.1.0% of nurses aged less than 30 years, with a mean age of 29.38 ± 6.25 . As well, 79.6% and 66.1% of them were female and married. In addition, the highest percentages of nurses had less than 10 years of experience, had a technical diploma in nursing, and worked in medical and surgical units (65.4%, 49.6%, & 53.9%, respectively).

Table 2 presents the distribution of different study variables' mean percent scores as reported by studied nurses. This table indicates that modifying autonomy constituted the highest mean percent score of moral sensitivity, while moral meaning was the lowest mean percent score (52.90% & 42.60, respectively). Regarding ethical sensitivity domains, the highest mean percent score was for respect for individuals, whereas the lowest mean percent score was for maintaining patients' confidentiality (66.53% & 57.50%, respectively). As for attitudes towards medication error domains, medical error reasons was the highest mean percent score, while, the lowest mean percent score was for the medical

error perception (49.60% & 42.50%, respectively).

Figure 1 illustrates levels of moral sensitivity among the studied nurses. As perceived from the figure 77.5 % of nurses had a high level of moral sensitivity (in response to research question 1).

Figure 2 portrays levels of ethical sensitivity among the studied nurses. It is clear from this figure that 55.8% of nurses had a moderate level of ethical sensitivity (in response to research question 2).

Figure 3 represents nurses' attitudes towards medication errors. This figure depicts that 98.9% of the studied nurses had a positive attitude towards medication errors (in response to research question 3).

Table 3 presents the correlation between the different study variables; this table displays that there was no statistically significant positive correlation between nurses' moral sensitivity and ethical sensitivity, where $p\text{-value} > 0.05$. However, there were significant and positive correlations between nurses' attitudes towards medication errors as regards their moral sensitivity and ethical sensitivity, where $p\text{-value} < 0.001$ (in response to research question 4).

Table 4 displays the effect of moral sensitivity and ethical sensitivity on nurses' attitudes towards medication errors. As obvious from this table, moral sensitivity and ethical sensitivity were responsible for 19.8% of the variation in nurses' attitudes towards medication errors ($R^2 = 0.198$). As a result, moral sensitivity and ethical sensitivity were significant predictors of nurses' attitudes towards medication errors (in response to research questions 5 & 6).

Table 5 shows that there were highly statistically significant relations between moral sensitivity as regards the studied nurses' age, gender, years of experience, and the department they worked in, where $p\text{-value} < 0.05$, 0.001, 0.05, & 0.001, respectively. As well, there was a highly statistically significant relationship between nurses' ethical sensitivity and their educational qualification, where $p\text{-value} < 0.001$. Moreover, there were highly statistically significant relations between nurses' attitudes towards medication errors as regards their age and the department they worked in, where $p\text{-value} < 0.001$.

Table 1: Personal and Job Characteristics of the Studied Nurses (n = 280).

Personal and job characteristics	No	%
Age (in year):		
• < 30	160	57.1
• ≥ 30	120	42.9
Mean ± SD	29.38 ±6.25	
Gender:		
• Male	57	20.4
• Female	223	79.6
Marital Status:		
• Married	185	66.1
• Unmarried	95	33.9
Years of experience:		
• < 10	183	65.4
• ≥ 10	97	34.6
Mean ± SD		8.16±6.84
Educational qualification:		
• Nursing school diploma	46	16.4
• Technical diploma in nursing	139	49.6
• Bachelor of nursing	95	34.0
Department:		
• Medical and surgical units	151	53.9
• Critical care units	100	35.7
• Operating room	29	10.4

Table 2: Distribution of Different Study Variables' Mean Percent Scores as Reported by the Studied Nurses (n=280)

Study variables	Maximum	Mean	±	SD	% of mean score
Moral sensitivity domains:					
• Modifying autonomy	20	10.58	±	1.58	52.90
• Reliance on medical authority	15	7.80	±	1.17	52.0
• Moral meaning	30	12.78	±	2.56	42.60
• Expressing benevolence	40	17.64	±	2.89	44.10
• Experiencing conflict	15	6.77	±	1.67	45.13
• Interpersonal orientation	30	14.17	±	2.37	47.23
Ethical sensitivity domains:					
• Respect for individuals	32	21.29	±	5.38	66.53
• Distributive justice	12	7.70	±	2.81	64.16
• Maintaining patients' confidentiality	8	4.60	±	2.03	57.50
Attitudes towards medication error domains:					
• Medical error perception	10	4.25	±	0.81	42.50
• Medical error approach	35	16.25	±	1.90	46.43
• Medical error reasons	35	17.36	±	2.46	49.60

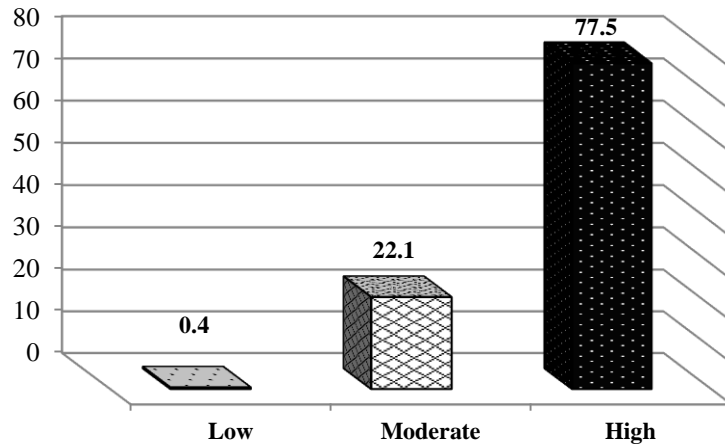


Figure 1: Levels of Moral Sensitivity among the Studied Nurses (n=280)

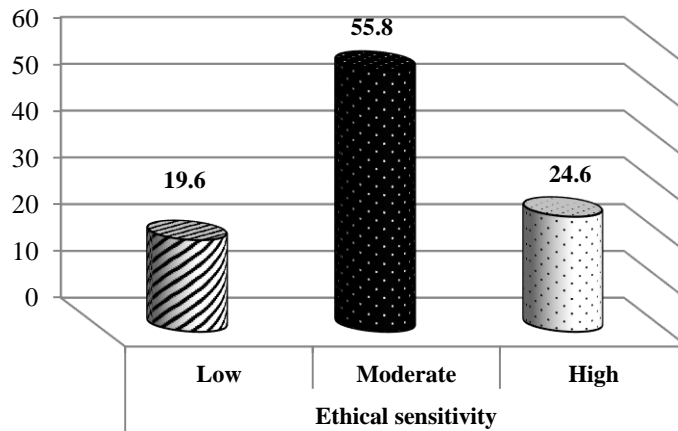


Figure 2: Levels of Ethical Sensitivity among the Studied Nurses (n=280)

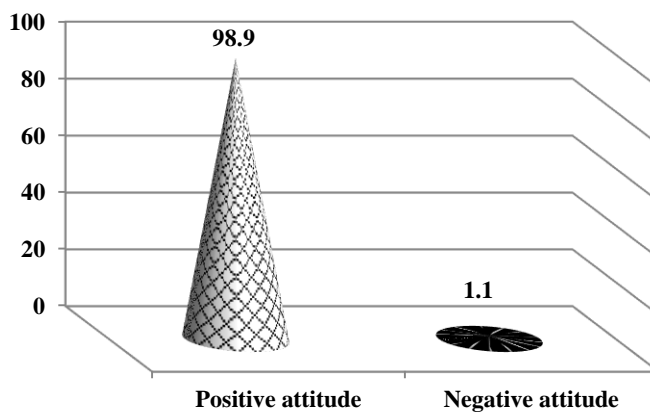


Figure 3: Nurses' Attitudes Towards Medication Errors (n=280)

Table 3: Correlation Between the Different Study Variables among the Studied Nurses (n=280).

Study variables	Moral sensitivity		Ethical sensitivity	
	r	P	r	p
Ethical sensitivity	0.073	0.223		
Attitudes towards medication errors	0.385**	0.000	0.252**	0.000

* Statistically significant at $P < 0.05$ ** Highly statistically significant at $P < 0.001$ **Table (4):** Regression Analysis to Study the Effect of Moral Sensitivity and Ethical Sensitivity on Nurses' Attitudes towards Medication Errors (n=280)

Items	Unstandardized coefficient		T	Sig.	R	R ²
	β	Std. Error				
(Constant)	22.411	1.893				
Moral sensitivity	0.170	0.025	6.824	0.000	0.445	19.8 %
Ethical sensitivity	0.107	0.026	4.171	0.000		

*Statistically significant at $P < 0.05$ ** Highly statistically significant at $P < 0.001$ **Table (5):** Relations between Personal and Job Characteristics of the Studied Nurses and Different Study Variables (n =280)

Variables	Moral sensitivity			Ethical sensitivity			Attitudes towards medication errors		
	Mean	\pm	SD	Mean	\pm	SD	Mean	\pm	SD
Age (in years):									
• < 30	70.74	\pm	7.46	33.54	\pm	8.196	37.88	\pm	3.33
• \geq 30	68.41	\pm	8.61	33.66	\pm	7.38	37.83	\pm	4.198
Independent t-test---P-value	4.032*—0.04			3.036—0.083			7.458**—0.007		
Gender:									
• Male	69.58	\pm	10.40	35.39	\pm	9.18	39.12	\pm	3.93
• Female	69.78	\pm	7.35	33.13	\pm	7.42	37.53	\pm	3.60
Independent t-test---P-value	7.405**—0.007			3.051—0.081			0.814—0.368		
Marital status:									
• Married	70.30	\pm	7.71	32.75	\pm	8.14	38.38	\pm	3.59
• Unmarried	68.65	\pm	8.60	35.23	\pm	6.99	36.84	\pm	3.77
Independent t-test---P-value	0.450—0.503			3.539—0.061			0.388—0.534		
Years of experience:									
• < 10	70.56	\pm	7.405	33.45	\pm	8.080	38.05	\pm	3.502
• \geq 10	68.21	\pm	8.971	33.85	\pm	7.415	37.49	\pm	4.088
Independent t-test---P-value	4.937*—0.02			2.540—0.112			3.364—0.068		
Educational qualification:									
• Nursing school diploma	69.26	\pm	8.714	32.80	\pm	6.598	36.87	\pm	4.064
• Technical diploma in nursing	70.01	\pm	7.879	32.00	\pm	8.132	37.85	\pm	3.508
• Bachelor of nursing	69.59	\pm	8.022	36.29	\pm	7.302	38.35	\pm	3.786
ANOVA F test----P-value	0.174—0.841			9.248**—0.000			2.475—0.086		
Department:									
• Medical and surgical units	68.25	\pm	8.736	34.14	\pm	7.484	37.32	\pm	3.534
• Critical care units	71.71	\pm	6.848	33.76	\pm	8.251	38.84	\pm	3.881
• Operating room	70.72		6.589	30.45		7.785	37.24		3.491
Independent t-test---P-value	6.008**—0.003			2.734—0.067			5.622**—0.004		

*Statistically significant at $P < 0.05$ ** Highly statistically significant at $P < 0.001$

Discussion

The importance of ethics in health care was gradually increases. Currently, as the variety of both health and value problems increase, providing morally valid confirmable care that can also provide moral sensitivity is considered a great need among nurses. Additionally, moral sensitivity is the most important component of ethical decision making, since it enables nurses to identify ethical problems in providing patient care, to make the most ethical decision, to achieve ethical sensitivity and to decrease medication errors (**Borhani et al., 2016**). Moreover, moral sensitivity is the ability to analyze ethical issues in the context of the ethical decision-making process, which implies contextual and intuitive understanding of the vulnerability of others' personal situations and insight into the consequences of ethical decision-making (**Lee & Kim, 2020**).

Therefore, this study aimed to assess moral sensitivity and ethical sensitivity as predictors of nurses' attitudes towards medication errors at Al-Ahrar Teaching Hospital.

As regards levels of moral sensitivity among the studied nurses; the results of this study showed that the highest percentage of nurses accounting for more than three-quarters had a high level of moral sensitivity. These findings could be due to that the studied nurses are relatively familiar with the ethical concepts of patient care in the hospital. The present study findings were in agreement with those of a study conducted by **Amiri et al. (2019)**, who examined the relationship between moral sensitivity and quality of care among nurses, in Iran, and revealed that, staff nurses had high level of moral sensitivity. Conversely, the previous findings were in disagreement with those of other previous studies as the one carried out, in Brazil, by **Dalla-Nora et al. (2016)**, to determine moral sensitivity among nurses, and the other done by **Borhani et al. (2016)**, in Iran, where they assessed moral sensitivity and its dimensions among nurses, and they reported that nurses had moderate level of moral sensitivity. Likewise, **Akca et al. (2017)**, who examined moral sensitivity among nurses, in Turkey, reported that nurses had moderate level of moral sensitivity. Moreover, **Arslan and Calpbini (2018)**, who studied moral sensitivity among pediatric nurses, in Turkey, and stated

that, nurses had moderate level of moral sensitivity.

Regarding the total mean percent scores of moral sensitivity dimensions as reported by the studied nurses; the results of this study showed that modifying autonomy dimension constituted the highest mean percent score of moral sensitivity, while moral meaning was the lowest mean percent score. These findings could be due to that the studied nurses had personal convictions and beliefs that they are acting professionally, and putting the interests of patients ahead of personal desires as ethical obligations. On the other hand, the studied nurses do not consider it necessary to involve patients in their medical care decisions. The fact that patients have no defined role in making decisions about their medical care and that the majority of decisions are made by the healthcare personnel including doctors and nurses may be attributed to the paternalistic view which is still dominating in the Egyptian healthcare system.

The present study findings were in agreement with those of another recent study carried out by **Alnajjar and Abou Hashish (2021)**, which examined moral sensitivity among nurses, in the Kingdom of Saudi Arabia, and found that modifying autonomy constituted the highest mean percent score of moral sensitivity. In the same way, **Borhani et al. (2016)**, in a previous study found that structuring moral meaning constituted the lowest mean score. Conversely, **Dalla-Nora et al. (2016)** reported that moral meaning constituted the highest mean score of moral sensitivity, while autonomy was the lowest mean score. As well, **Amiri et al. (2019)** stated that, expressing benevolence constituted the highest mean score, while, experiencing conflict was the lowest mean score of moral sensitivity.

Regarding ethical sensitivity levels among studied nurses, the results of this study showed that more than half of nurses had a moderate level of ethical sensitivity. This may be due to that ethical decision-making by staff nurses was based on their routine tasks and physicians' orders. As well, this could be due to that nurses had lack of the required skills to interpret and be aware of verbal or non-verbal clues and behaviors of patients in order to determine their needs. Likewise, they are not sensitive enough to the

patients' physical and emotional needs, and don't take this into account when caring for them

Similarly, the present study finding was in agreement with those of other previous studies as the one carried out by **Aksu and Akyol (2011)**, who examined ethical sensitivity among nurses, in Turkey, and the other done by **Başak et al. (2010)**, who studied ethical sensitivity among staff nurses, in Turkey, and they found the ethical sensitivity of nurses was at medium level. Likewise, this result was congruent with the results of **Ertug et al. (2014)**, who conducted a study, in Turkey, to examine ethical sensitivity and related factors of nurses working in the hospital settings, and they stated that nurses had medium level of ethical sensitivity. As well, **Alnajjar and Abou Hashish (2021)** detected in their recent study that nurses exhibited a moderate level of ethical sensitivity.

Considering ethical sensitivity domains, the results of the present study indicated that the highest mean percent score was for respect for individuals' domain, whereas the lowest mean percent score was for maintaining patients' confidentiality. These findings could be due to that the studied nurses had personal convictions and beliefs that all people deserve the right to fully exercise their autonomy. As well, nurses could follow a system for interaction with patients in which they ensure that patients are able to make a choice by themselves.

Regarding nurses' attitudes towards medication errors, the result of the present study depicted that nearly all of the studied nurses had a positive attitude towards medication errors. This finding could be due to that the studied nurses have a high level of awareness of incident reporting and medical errors. Furthermore, nurses are familiar with reporting policies and systems in the hospital. This result was congruent with those of a recent study conducted out by **Ozgonul et al. (2021)**, who examined the relationship between nurses' ethical sensitivity and attitudes towards medical errors, in Turkey, and they found that the attitudes of nurses towards medical errors were positive.

As for attitudes towards medication error domains, the results of this study showed that medical error reasons domain constituted the highest mean percent score, while, the lowest mean percent score was for the medical error

approach domain. This finding could be due to that the studied nurses are highly aware of the reasons of medical errors and importance of medical error notifications. This result was congruent with those of a study conducted out by **Korhan et al. (2017)**, who examined the determination of attitudes of nurses in medical errors and related factors, in Turkey, and they found that the medical error reasons domain constituted the highest mean score. Conversely, **Ozgonul et al. (2021)** in a recent study found that the medical error approach domain scores were higher among nurses.

Concerning the correlations between the different study variables and the predicting effect of moral and ethical sensitivity; the current study findings revealed that there was no statistically significant positive correlation between nurses' moral sensitivity and ethical sensitivity. However, there were significant and positive correlations between nurses' attitudes towards medication errors as regards their moral sensitivity and ethical sensitivity. Additionally, moral and ethical sensitivity were significant predictors of nurses' attitudes toward medication errors. These findings could be due to that nurses were encountered many ethical problems associated with medication error as the limited number of nurses, insufficient knowledge and practice about professional ethical values, lack of practical training in the ethical decision-making process of the clinic, improper attitudes of healthcare professionals towards ethics, lack of mechanisms available for assessing the ethical situations and inadequate sense of teamwork among those working in the unit.

The previous study results were congruent with those of **Mahdiyoun et al. (2017)**, who examined nurses' moral sensitivity and the observance of patients' rights in ICUs, in Iran, and they reported that nurses who are more sensitive ethically are more likely to respect patients' rights than other nurses. Likewise, **Ozgonul et al. (2021)** reported that nurses' attitudes towards medical errors are affected by their level of ethical sensitivity.

Considering relation between personal and job characteristics as regards different study variables; the results of the present study indicated that there were statistically significant relations between moral sensitivity as regards the

studied nurses' age, gender, years of experience, and the department they worked in. As well, there was a statistically significant relationship between nurses' ethical sensitivity and their educational qualification. Moreover, there were statistically significant relations between nurses' attitudes towards medication errors as regards their age and the department they worked in. These results could be due to that older nurses are becoming more experienced and sensitive to face ethical problems over the years compared to younger ones.

The previous study results were congruent with those of **Arslan and Calpbiniçi (2018)**, who found that moral sensitivity increased along with the increase in professional experience and age. Likewise, **Ertug et al. (2014)** in a previous study, and **Ozgonul et al. (2021)** in a recent study found that the ethical sensitivity was significantly and positivity correlated to nurses' educational qualification. As well, **Ozgonul et al.** reported that there was a statistically significant relation between nurses' attitudes towards medication errors as regards the department they worked in.

Conclusion

Moral sensitivity and ethical sensitivity were significant predictors of nurses' attitudes towards medication errors.

Recommendations

Based on the results of the main study findings, the following recommendations are suggested:

- Ethics issue should be incorporated during both school education and in-service training programs after graduation.
- Hospital administrators should focus on handling moral conflicts in constructive ways, not by trying to erase the problem.
- Education programs in form of workshops or seminars should focus on pragmatic, on the job training for coping with moral conflict.
- The nurse manager should guide and direct the health team to develop strategies to prevent and reduce medication administration errors.
- The nurse manager should provide an institutional system and policies that can support and prevent medication administration errors.
- The nurse manager should measure staff nurses' awareness of the codes of professional ethics and patients' rights periodically and, if necessary, staff nurses' training in this field should be done in order to improve nurses' attitude toward medication errors
- Further research about the relationship between ethical sensitivity and medication errors reporting rates among nurses

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