Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 7, Issue 1, pp: (1135-1144), Month: January - April 2020, Available at: www.noveltyjournals.com

Safe Managing of Doctors' Verbal/Phone Orders and its Effect on Patient Safety Culture among Nurses

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Abstract: **Safe managing of doctors' verbal/phone orders helps to provide safe care, reduce mortality and morbidity, and decrease the length of hospital stay and cost. Patient safety is highly linked to the attitudes of health care providers, where those with more positive attitudes achieve higher degrees of patient safety. Aim: The study aimed to improve safe managing of doctors' verbal/phone orders and investigate its effect on patient safety culture among nurses. Design: A quasi-experimental design with one group pre-post assessment was used in this study. Setting: The study was conducted at the surgical units at El- Demerdash Surgical Hospital affiliated to Ain Shams University Hospitals. Subjects: 60 staff nurses participated in the study. Tools of data collection: knowledge questionnaire, an observation checklist, audit sheet, and patient safety culture survey. Results: less than three quarters of the staff nurses had satisfactory knowledge in the pre-intervention phase and reached 93.3% at post-intervention phase; less than one third of them had adequate performance when receiving telephone orders before the intervention which increased significantly after the intervention to 96.6%; one quarter of staff nurses had adequate performance regarding documentation of telephone orders in the patient medical file before the intervention phase compared to 98.3% of them after the intervention. Moreover, there was statistically significant improvement in total patient safety culture after intervention. Conclusion: There was improvement in staff nurses' knowledge and performance when managing doctors' verbal/phone orders, associated with boosting of patient safety culture among staff nurses. Recommendations: The hospital is in need of developing a written policy about safe managing of doctors' verbal/phone orders and implementing it. A well-constructed internal auditing and feedback for improving patient safety in hospital care is highly recommended.**

Keywords: **Patient Safety culture, staff nurses, Verbal/phone orders.**

1. INTRODUCTION

Communication is an important and integral part of life, without which no one might survive. Verbal and non-verbal communication starts from birth and does not end until death ***(Vertino, 2014)***. Effective communication among healthcare providers is the key driver for the success of the healthcare system. All the decisions related to patient care depend on effective communication among healthcare providers. Communication and teamwork are the backbones of the organization and helps to safeguard patients' safety. Nurses and doctors play a vital role in creating a healthy communication and collaboration to enhance excellent patient outcomes ***(Amudha, et al, 2018).***

In healthcare organizations, the type of nurse-physician relationship and the effectiveness of internal communication is one of the critical elements in deciding the quality of patient care. Moreover, effective communication helps to make collaborative decisions towards patient- centred care, and promotes positive outcomes ***(Sheldon & Hilaire, 2015)***.

Communication is a two-way dialogue between patients and providers, or by definition, a two-way road where both speak and are, as well, listened to without either interrupting; both ask questions for clarity, express opinions and interchange information, and both are able to completely grasp and understand what the other means to say ***(Boykins, 2014).***

There are various categories of communication and more than one may occur at any time; verbal communication in which a person listens to another to understand their meaning, such as face to face communication, or via telephone, radio or television and other media; nonverbal communication in which you observe a person and infer meaning such as body language, gestures, written communication such as letters, e-mails, magazines, or via other media and visualization such as graphs and charts ***(Nesa, 2015).***

Good communication skills among health personnel are seen to have many positive effects on health outcomes and on patient satisfaction ***(Olsson et al., 2014)***. On the other hand, disrupted communication can endanger the safety and quality of healthcare and finally lead to medication errors and disruption of patient safety and satisfaction ***(Ghahramanian et al., 2017).*** Telephone orders are verbal communication given over the phone by a doctor or someone authorized to prescribe drugs or give orders to save patients' lives. Effective managing of telephone orders facilitates the continuity of care and enhances patient safety ***(Chegg, 2018).***

Verbal orders are discouraged but may be acceptable in extenuating circumstances, i.e., it is impossible or impractical for the practitioner to write the order because of urgent patient care needs. Verbal orders are not to be used when the ordering practitioner is present except in emergent situations. It should be authenticated by the prescribing practitioner within 48 hours ***(Affinity Health System, 2017).*** Phone orders (verbal orders) received via the telephone can be more error-prone than written orders due to the introduction of a number of variables not present when orders are written by the prescriber. There is a possibility to misinterpret spoken language as a result of accent or pronunciation which can intimidate the patient life. Phonetics components of medication names when verbalizes can increase the potential for error with sound alike drug names ***(Koczmara, Jelinic, and Perri, 2015).***

There are many precautions usually considered in handling phone orders: The organization identifies, in writing, the staff authorized to receive and record verbal orders in accordance with law and regulations, only authorized staff receive and record verbal orders. Documentation of verbal orders includes the date and the names of individuals, who gave, received, recorded, and implemented the orders. Documentation of verbal orders includes the time the verbal order was received. Before taking action on a verbal order or verbal report of a critical test result, nursing staff uses a record and "read back" process to verify the information ***(The Joint Commission, 2012).***

Patient Safety Culture (PSC) plays a pivotal role in the assessment of the safety and quality of hospital services ***(Fujita et al., 2014)***. The efforts to improve patient safety and prevent adverse events in hospitals have become a national priority ***(The Joint Commission, 2017).*** Patient safety is defined as avoidance and prevention of patient injuries or adverse events resulting from the processes of healthcare delivery. Patient safety is achieved through collaborative efforts of healthcare providers and a well-integrated healthcare system ***(Kim et al., 2015).*** The basics of developing a safety culture in healthcare are to decrease errors and improve the total quality of healthcare ***(Wang et al., 2014).***

Significance:

Nurses and doctors are dedicated to providing safe care within their scope of practice. Effective managing of phone/verbal orders facilitates the continuity of care and enhances patient safety. There is a possibility of misunderstanding verbal orders. Patients who are admitted to surgical units usually have persistent health problems, so they need fast and accurate manipulation with their complaints from different healthcare providers especially nurses.

The researchers observed that staff nurses, who worked in afternoon and night shifts in surgical units, needed to call the unit medical resident by phone to update him/her on the patient condition, needs, and/or complains. Accordingly, he/she gave orders over the telephone, which has a higher potential for errors as these orders sometimes can be misheard or misinterpreted, which can threaten the patient life. Therefore, this study was carried out in an attempt to develop staff nurses' skills in managing doctors' verbal/phone orders as a means for maintaining safety for both the patient and the workplace.

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Aim of the study:

The study aimed to improve safe managing of doctors' verbal/phone orders and investigate its effect on patient safety culture among nurses.

Research hypothesis:

The improvement of staff nurses' safe managing of doctors' verbal/phone orders will be associated with boosting patient safety culture among staff nurses.

2. SUBJECTS & METHODS

- **Research Design:**

A quasi-experimental design with one group pre-post assessment was used in this study.

- **Setting:**

The study was conducted in the surgical units at El-Demerdash surgical hospital affiliated to Ain Shams University Hospitals. This hospital consists of 15 units rendering services for different surgical specialties such as orthopaedic surgery, general surgery, urology surgery, neurosurgery, ENT surgery, plastic surgery and burn surgery.

- **Subjects:**

The total number of staff nurses working in the above-mentioned units was 128 staff nurses. The inclusion criteria were staff nurses who work in afternoon and night shifts and are responsible for providing direct care to the patients, so 60 staff nurses participated in the study.

➢ **Tools of data collection:**

Four tools were used for data collection, namely knowledge questionnaire, an observation checklist, an audit sheet and patient safety culture survey.

A. knowledge questionnaire

It is a self-administered questionnaire sheet aimed to assess staff nurses' knowledge as regards telephone orders. It was developed by the researchers based on the review of related literature ***(Schnalletal, 2008; Joint commission resources, 2010; World Health Organization, 2012***). It included 30 multiple choice questions (MCQs) underlying three dimensions as follows; communication (11 items), telephone orders (12 items), and patient safety (7 items).

- **Scoring system:**

For each question, a correct answer was scored one and an incorrect answer was scored zero. For each area of knowledge, the scores of the items were summed-up and the total was divided by the number of the items, giving a mean score for the part. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if it was less than 60%.

B. observation checklist:

It aimed to assess staff nurses' performance when receiving verbal/phone orders. This tool was developed by the researchers based on review of related literature (***Joint Commission International Standards for Hospital, 2008***; ***El Sayed, 2010; Salem, 2012).*** It consisted of 10 statements such as asking about patient's full name, the spelling of the medication name if necessary, rereading the order taken to the doctor. This tool contains items for identification data such as code number, work unit, the date and time of observation.

- **Scoring system:**

Each statement observed to be done was scored one and zero if not done. The scores of the items were summed-up and the total was divided by the number of items, giving a mean score. The performance of staff nurses was considered adequate if the percent score was 80% or higher and inadequate if it was less than 80%.

C. Audit sheet:

This tool aimed to check the documentation of verbal/phone orders as written by staff nurses in patient file. It was developed by the researchers through the review of related literature ***(Joint Commission International Standards for Hospital, 2008, El Sayed, 2010; Salem, 2012).***The audit sheet consisted of 10 items such as writing the order in the correct patient file, writing the date and time of verbal/phone orders, writing the doctor's name, the name of receiving staff.

- **Scoring system:**

The audited items checked to be done were scored 1 and zero if not done. The scores of the items were summed-up and the total was divided by the number of items, giving a mean score. The performance was considered adequate if the score percentage was 80% or more and inadequate if it was less than 80%.

D. Patient safety culture survey:

This tool was used to measure the patient safety culture as perceived by staff nurses. It was adopted from **Agency for Healthcare Research and Quality (AHRQ), 2004.** It consists of 42 items divided into 12 dimensions: organizational learning/continuous improvement, teamwork within hospital units, staffing work conditions, supervisor/manager expectations and actions promoting safety, feedback and communication about error, teamwork across hospital units, communication openness, overall perception of safety, adverse event reporting & recording, hospital management support for patient safety, hospital handoffs & transitions, non-punitive response to error.

- **Scoring system:**

For each item, the responses from strongly agree to strongly disagree were scored from 5 to 1 respectively. For each dimension of patient safety culture, the scores of the items were summed-up and the total was divided by the number of the items, giving a mean score for the dimension. Staff nurses' perception for patient safety culture was considered positive if the score percentage was 60% or more and negative if it was less than 60%.

An attached sheet was used for collecting data regarding demographic characteristics of the study subjects such as age, gender, marital status and work unit, qualifications in nursing, work experience, previous attendance of training programs about communication and patient safety.

- **Tools Validity:**

After the construction of data collection tools, validity of the tools were assessed by a panel of experts consisted of nine members; seven of them are professors and assistant professors of medical-surgical nursing and nursing administration departments at Ain Shams and Cairo Universities, and two are consultants of quality management from the Ministry of Health. Two types of validity were used; face and content validity. Face validity aimed at inspecting the items to determine whether the tools measure what is proposed to measure. Content validity was conducted to determine whether the tools cover the appropriateness of content as well as its relevancy to the study aim. Based on experts' opinions, necessary modifications were made as adding, omitting, and rearranging of some items.

- **Tools reliability:**

Internal consistency was achieved by using Cronbach's Alpha that was used to assess the reliability of the tools through internal consistency. It turned to be (0.92) for knowledge questionnaire; (0.89) for observation checklist; (0.91) for audit sheet; and (0.84) for patient safety culture.

- **Preparatory stage:**

This stage started from October to December 2018. The researchers reviewed the past and current national and international related literature to be well acquainted with the study topic, and developed the different study tools.

Pilot study:

A pilot study was conducted on seven staff nurses representing 10% of the main study subjects to examine the clarity, feasibility and applicability of the study tools in addition to estimating the time needed to fill the different study tools. The

knowledge questionnaire and patient safety survey sheets were given to staff nurses for filling them in. The time needed for filling in the sheets ranged from 30 to 40 minutes; while the observation checklist and audit sheet conducted by the researchers took from 5 to 15 minutes. No modifications were carried out after the pilot study. The pilot stage took one month.

Field Work:

The actual field work started from the August 2018 and was completed by the end of October 2019. It involved assessment, planning, implementation, and evaluation phases.

a) Assessment phase:

This phase started at the beginning of August 2018 till the end December 2018 after securing all official permissions. The researchers visited each of the selected units and met the study subjects, explaining the aim of the study and how to fill in different questionnaire sheets. The collection of data was done during the working hours of the afternoon shift two days per week. Each participant filled in the questionnaire sheets at their work units and returned them to the researcher. The researchers were present in this process to clarify any queries and prevent misunderstanding. These sheets were distributed two times throughout the study phases.

The staff nurses were then observed individually by the researchers using the observation checklist. Each checklist was given a code and marked by the work unit. Each staff nurse was observed three times. The observation lasted 2-5 minutes according to the duration of phone calls. The average of the three observations was used in the statistical analysis. The researchers used concurrent audit to check and revise staff nurses' documentation of phone orders in the patient file. This audit occurred two times throughout the study phases.

b) Planning phase:

After completing the data collection in the assessment phase, analysis was done and based on the review of the related literature. The researcher designed the program and its content. Objectives of the proposed program were written; also the designing handout was done. The place and time were set for conducting the staff nurses' work schedule, and then a program schedule was prepared accordingly. All materials and equipment needed were prepared. This phase took one month.

c) Implementation phase:

The participated staff nurses were divided into four groups according to their work schedule. The researchers implemented the training program sessions from 11am to 1pm. Each group took three weeks to complete the program. In the first session, the researcher explained the aim of the study, the program aim, objectives and contents outlines.

At the beginning of each session, an orientation about the objectives of the session took place. The teaching methodology used during the implementation of the program varied based on the session topic, such as discussions, lectures, role plays, group activities, assignments, and practice sessions. Audio-visual multimedia was used, such as data show, whiteboard, and flip charts. The researchers distributed a booklet about the content of the program to the participants. This phase took four months from to February 2019 to April 2019.

d) Follow-up phase:

One month after the completion of implementing the program, the researchers evaluated the effect of the intervention on staff nurses' knowledge, performance, and attitude. This was done using the same data collection tools, as it was done in the assessment phase. The observations were made three times for each participant, and the average was used in analysis. This phase started in May 2019 and was completed by the end of December 2019.

Administrative design and ethical considerations:

The researchers obtained the approval for conducting the study from the directors of the hospital after explaining the aim of the study. The researchers met the study subjects and explained the aim of the study and obtained their approval to participate in the study. They were informed about their right to refuse to participate or withdraw from the study at any

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time. They were also assured that the collected data would be confidential and used for the research purpose only. The study procedures could not induce any actual or potential harm to the participants.

- **Statistical Design:**

Data entry and statistical analysis was carried out using Statistical Package for the Social Science (SPSS) version 20.0. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Qualitative categorical variables were compared using Chi Square Test. Statistical significance was considered at p-value <0.05.

- **Limitations of the study:**

The main limitation was the prolonged time for collecting data through the observation and audit because it depends on occurrence of phone orders.

3. RESULTS

Table (1): Demographic characteristics of the studied staff nurses (No. = 60)

Variables		No.	%
Age (years)	<35 years	35	58.3
	≥35 years	25	41.7
	Mean±SD	33.± 7.8	
Gender	Male	17	28.3
	Female	43	71.7
Marital status	Married Not married	50 10	83.3 16.7
Nursing Qualifications	Diploma	46	76.7
	Higher diploma	14	23.3
Years of experience	<15	24	40.0
	≥15 years	36	60.0
	Mean±SD	18.73± 6.4	
Attending training programs on communication	Yes	50	83.33
	No	10	16.67
Attending training courses on patient safety	Yes	28	46.7
	No	32	53.3

Table (1) shows that more than half of staff nurses were less than 35 years old with mean age 33± 7.8, more than two thirds of them (71.7) were females. Less than one quarter of staff nurses (16.7 %) were not married. 76.7 % of them had a nursing diploma. Less than two thirds of the studied staff nurses had less than fifteen years of experience, and the majority of them previously attended training programs on communication. While, 53.3% of the staff nurses didn't attend any previous training courses related to patient safety.

Table (2): Staff nurses' knowledge regarding telephone orders before and after the study intervention (No. = 60)

Satisfactory Knowledge (60%+)	Before the intervention		After the intervention		x^2	p-value
	No.	%	No.	%		
Communication Dimension	43	71.6	59	98.3	18.80	<0.001*
Telephone order dimension	20	33.3	57	95.0	50.61	<0.001*
Patient safety dimension	24	40	58	96.9	48.66	<0.001*
Total	27	45.0	56	93.3	36.95	<0.001*

(*) Statistically significant at p < 0.05

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Table (2) illustrates that, at the pre-intervention phase, less than three quarters of the staff nurses had satisfactory knowledge regarding communication dimension. At the same phase, less than half of staff nurses had satisfactory knowledge regarding telephone order and patient safety dimensions. Statistically significant improvements were revealed at the post intervention phase in all dimensions (p<0.001), reaching 98.3% satisfactory knowledge for communication dimension. Also there was a statistically significant improvement of total knowledge regarding telephone orders throughout the intervention phases.

Table (3): Staff nurses' performance when receiving telephone orders before and after the study intervention (No.= 60)

Adequate performance (80% +)	Before the intervention		After the intervention		x^2	p-value
	No.	%	No.	%		
Total	19	31.6	58	96.6	59.33	**<0.001***

(*) Statistically significant at p < 0.05

Table (3) clarifies that, at the pre intervention phase, less than one third of the staff nurses had adequate performance when receiving telephone orders. While after the program, the majority of the staff nurses had adequate performance when receiving telephone orders. There was a statistically significant improvement at the post intervention phase (p< 0.001).

Table (4): Auditing of documentation of telephone order as written by staff nurses before and after the study intervention (No. = 60)

Adequate performance (80 % +)	Before the intervention		After the intervention		x^2	p-value
	No.	**%**	**No.**	**%**		
Total	15	25.0	59	98.3	46.77	**<0.05***

(*) Statistically significant at p < 0.05

Table (4) shows that one quarter of the studied staff nurses had adequate performance regarding documentation of telephone orders in the patient file before the intervention phase. While the majority of them had adequate performance regarding documentation of telephone orders at post intervention phase.

Table (5): Staff nurses' perception towards patient safety before and after the intervention (No. = 60)

Positive (60%+)	Before the intervention		After the intervention		x^2	p-value
	No.	**%**	**No.**	**%**		
Teamwork within units	40	66.6	54	90.0	16.55	<0.001*
Supervisor/manager expectations and actions that promote patient safety	48	80	57	95.0	11.50	<0.001*
Organizational learning and continuous Improvement	43	71.6	53	88.3	5.80	<0.05*
Communication openness	33	55.0	49	81.6	9.25	<0.05*
Feedback and communication about error	45	75.0	55	91.6	6.82	<0.05*
Staffing	30	50.0	56	93.9	14.30	< 0.001*
Non punitive response to errors	41	68.3	53	88.3	15.86	< 0.001*
Management support for patient safety	34	56.6	50	83.3	8.23	<0.05*
Teamwork across units	47	78.3	58	96.6	11.53	<0.001*
Handoffs and Transition	44	73.3	52	86.6	7.56	<0.05*
Overall perceptions of patient safety	31	51.6	48	80.0	12.40	<0.001*
Frequency of events reported	33	55.0	54	90	9.22	<0.05*
Total	4061.5		5779.3		17.44	<0.001*

(*) Statistically significant at p < 0.05

Table (5) demonstrates that there were statistically significant improvements in all patient safety culture dimensions and total patient safety culture after the intervention.

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4. DISCUSSION

Managing of doctors' verbal/phone orders has been identified as a potential contributor to poor quality and less safe care. Bad events occur in hospitals every day, they can occur in the most efficient and safety-conscious areas. No area is immune, and healthcare providers do not come to work with the intention of harming their patients ***Wakefield & Wakefield, (2017).*** The main purpose of the study was to improve safe managing of doctors' verbal/phone orders and investigate its effect on patient safety culture among nurses.

The results of the present study showed that there were statistically significant improvements in staff nurses' total knowledge regarding telephone orders throughout the intervention. This finding may be attributed to the information the staff nurses had gained during the programme and their avid interest to gain knowledge about the study topic which is very important for them. This finding was in the same line with ***Gaikwad et al., (2018)*** who concluded that, the Educational intervention had a significant impact on the improvement in the knowledge of nursing staff

The improvement of nurses' knowledge after the programme was confirmed by ***Kiyancicek, et al., (2014)*** who assured that the importance of healthcare professionals' education has to be emphasized in order to gain information, ability and attitude for patient care and safety. Providing patient safety is an important topic that every country has to care about regardless of the development level.

The current study findings showed that before the programme, less than one third of participating staff nurses had adequate performance when receiving telephone orders. This might be due to insufficient knowledge of staff nurses regarding how to manage verbal doctor order. There was obvious improvement of staff nurses' performance after the programme which may be attributed to the fact that they were trained during the programme about the steps and manner of managing phone orders effectively. So, nurses became familiar with the correct receiving telephone orders and identify consequences of ineffective managing of phone orders. The finding was in congruence with **Chegg *(2018)*** who stated that managing verbal/phone orders should only be used in emergency situations and shall only be taken by a registered nurse who should repeat the order to the doctor to ensure that the details are correct and can refuse it if she believes that it may compromise the patient's care and treatment.

At the pre-program phase, one quarter of the studied staff nurses had adequate performance regarding documenting telephone orders and the doctor's name and nurse name in the patient file, this could be due to staff nurses' perception about telephone orders as verbal orders that achieved their purpose by implementing the doctor orders taken over the phone, and the majority of staff nurses didn't recognize their vital role in documenting these orders. Meanwhile, this performance was improved markedly after the training program because of the focus of the training programme on the whole process and steps to managing phone orders safely and effectively. This improvement of staff nurses documentation of phone orders was ensured by ***(Kim et al., 2012)*** who emphasized the effect of implication of educational training programmes on subjects' performance level and work outcomes.

Regarding safety culture, the present study revealed that there is a significant improvement of positive safety culture among staff nurses after the intervention; this was shown in all dimensions and in the total score after the intervention. This improvement in the positive attitude may be attributed to the staff nurses' interest and concern about safety culture which inspire nurses' practice and perception. The studied hospital keeps on providing training programmes and courses on patient safety and related processes and procedures. In agreement with this finding ***(Park et al., 2012; Schwendimann, et al., 2013; Kim et al., 2014; Brasaite, et al., 2016)*** illustrated the effectiveness of a safety campaign in enhancing safety behaviour and culture in frontline staff. In addition, ***Alshammari et al., (2015)*** recommended practical training programmes related to patient safety, which enhance safety culture and attitude.

5. CONCLUSION

There was improvement in staff nurses' knowledge and performance when managing doctors' verbal/phone orders, associated with boosting of patient safety culture among staff nurses.

6. RECOMMENDATIONS:

1- Nursing Managers have to disseminate idea of A "just" culture is a key element of a safe culture employees must be willing to report adverse events and near misses without threat of retribution a totally blame-free environment

2- Reviewing and updating policies in the healthcare centres are essential to ensure the proper implementation of doctors' verbal/phone orders and optimizing patient safety and reducing healthcare concerns.

3- Early detecting and analysing patient injuries and near misses; open communication regarding patient injury results, both within and outside the organization.

4- Encourage staff nurses to utilize and keep up with recent advances in medical technology and facilities regarding communication after gaining hospital approval.

5- Using feedback and communication in a confidential manner concerning errors will allow staff to learn from errors and avoid it in the future.

6- Further studies suggestions:

- Investigating the effect of the training programme of patient safety goals on staff nurses' safe practice.

- Assessing the working climate and its influence on incidence reporting among nurses.

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