

Research Article

**Nurses' Performance about NGT Feeding in Intensive Care Unit,
Kerman University of medical science Hospitals (2013)**

**Mohammad Ebrahimi¹, Hakimeh Hossien Rezaei²,
Roghaieh Keykha³, Sakine Sabzevari⁴,
and Saeedeh Varesteh⁵,**

¹Iranshahr University of Medical Sciences, Iranshahr, Iran

²Department of Intensive Cares, School of Nursing,
Kerman University of Medical Sciences, Kerman, Iran.

³Faculty Member, Zahedan School of Nursing and Midwifery,
Zahedan University of Medical Sciences, Zahedan, Iran.

⁴Department of Intensive Cares, School of Nursing, Kerman
University of Medical Sciences, Kerman, Iran.

⁵Corresponding Author: Nurse, Zabol University of Medical Sciences, Zabol, Iran.
Faculty Member, Community Nursing Research Center,
Zahedan School of Nursing and Midwifery,
Zahedan University of Medical Sciences, Zahedan, Iran.
Email: saeidehvarasteh@yahoo.com.

ABSTRACT

Introduction: Nasogastric feeding in patients is one of nurses' responsibilities and has a key role in its success. Improper performance may lead distraction in nutrition. This study was done to assess nurses' performance about NGT feeding and its care in Kerman University of medical science hospitals in 2013.

Method: This was a descriptive cross sectional study was done in 119 critical care nurses who were working at hospitals . A researcher made questionnaire was used for data gathering in two parts (demographic variables and 19 performance items). .For data analysis, SPSS 18, independent T test, ANOVA and Pearson correlation was used.

Results: In this study score of performance was 58.21 ± 8.98 from 76 so nurses achieved 76.5% of total score and their performance was semi desirable .The best practice was about tube lockage and infection prevention .Between demographic variables and NGT feeding weren't any significant difference.

Conclusion: Almost of nurses had acceptable and semi desirable performance .As nurse's important role in NGT feeding management, it is recommended to planning for better knowledge, perception and performance

Keywords: performance, nurses, ICU, NGT feeding.

INTRODUCTION

Nutrition is the basic and physiological needs of human. The need changes when one is in hospital. The change may vary a lot depending on the kind of disease and patient's conditions. Of patients whose nutritional status undergo extensive

changes are those admitted to various sections of intensive care units, especially to ICU (1). Nutritional support is accepted as an integral part of patient care in intensive care unit. However, nutrition has remained in lower priority compared

to other health cares and many patients under tube feeding do not get enough nutritional needs (2, 3). Malnutrition is a common problem in patients hospitalized in this unit. The first available reports revealed the prevalence of malnutrition about 30-55%; however, despite the progresses in nutritional support in the last 30 years, nursing, medical and nutritional journals still report that malnutrition has remained as a problem in intensive care units and its prevalence is still the same as that 10 years ago (4). In Iran, there is a dearth of research concerning the prevalence of malnutrition in ICU. Meanwhile, Pourniazi et al. (2005) examined the prevalence of malnutrition in patients hospitalized in Tehran Ayatollah Taleghani Educational Hospital and overall determined that the prevalence of malnutrition was 52.2% (13.2% mild malnutrition, 10.5% moderate malnutrition and 28.5% malnutrition severe 5). The highest prevalence of malnutrition was reported in the gastroenterology unit (64%), while the intensive care unit was not examined in their study (5). In most cases, the amount of food received by patients feeding gastrointestinal tube (G-tube) in ICU is less than that prescribed. Whelan et al. (2006) reported that 59% to 87% and 70% to 88% of prescribed formula have been fully given to patients in the intensive care and public units, respectively (6). Almost 36% of patients admitted to the intensive care unit receive less than 90% of their required energy (1). West & Marshall (2006) reported that feeding patients by nurses in the intensive care unit can lead to limit tube nutrient solutions in critically ill patients and help to create malnutrition for them (7). Also, some studies have reported that there is a difference between recommended nursing cares and nurses' performance in tube feeding (8-10). Nurses play an important role in ensuring the success of this nutritional approach through properly managing patients feeding tube (7). By determining the nutritional performance of nurses in intensive care unit, the nutrition leading to improve the clinical outcomes can be highly affected. Now, given the significance of the issue

and the fact that identification of nurses' operational feeding weaknesses causing malnutrition help to identify key areas for teaching and research. Accordingly, this study aimed to determine nurses' performance working in intensive care unit associated with feeding via gastrointestinal tube in selective hospitals of Kerman University of Medical Sciences.

MATERIALS AND METHODS

This was a cross-sectional study. The statistical population consisted of all nurses working in intensive care units of hospitals affiliated to Kerman University of Medical Sciences including 119 nurses. The sampling was done using census and purposeful technique. In order to collect data, a researcher-made questionnaire with two parts was used: The first part consisted of demographic characteristics of the subjects under study including 10 items (age, sex, marital status, level of education, work experience, status, type of contract, overtime, name of hospital, shift). The second part of the questionnaire contained 19 researcher-made items to measure the performance of nurses in relation to nutritional performance developed using valid articles and books and viewpoints of professionals in the field. The questionnaires were scored based on a 5-point Likert scale (always=4, Often =3, sometimes= 2, rarely=1, and never =0). Therefore, the maximum and minimum scores were 76 and 0, respectively. Content validity index was used to determine the validity of the questionnaire. In the way that after drawing up the questionnaires, the researcher distributed them to 10 experts to make comment for the relevance, simplicity, and clarity of each words with the examined objectives on a 4-point scale including quite good, fairly good, fairly bad and very bad. After collecting the comments, the total validity index was calculated as 95% for the questionnaire of performance. Then, through a pilot study, the reliability of the questionnaire was evaluated and Cronbach's alpha coefficient was calculated which was equal to 0.79.

Before starting the project, the researcher earned the required permits from the relevant authorities and after visiting the hospitals and introducing himself, he presented the necessary explanations on the study objectives and the way to do it. If subjects desired to participate in the study, the questionnaire was given to them to be completed at the appropriate time. Finally, the collected data were analyzed using statistical software SPSS V.18 and descriptive and inferential statistical tests were run. The level of significance was considered less than 0.05. The study was approved by ethic code of K.92.191 in the Deputy of Research and Technology at Kerman University of Medical Sciences.

RESULTS

In this study, 119 people responded to the questionnaire among whom 9 (7.6%) cases were male and 110 (92.4%) ones were female; 23 (19.3%) ones were single and 96 (80.7%) ones were married and 117 (98.3%) people were nurses and 2 (1.7%) ones were supervisors. Their mean age was 31.98 years old. 64 (53.8%) cases had work experience for less than 5 years, 115 (96.6%) ones had a bachelor's degree and only 4 ones (4/3%) had a master's or higher degree.

In this study, the overall score of the nurses' performance in the field of tube feeding was 58.21 ± 8.98 i.e. the nurses obtained 76.5% of the score and that their performance was relatively good. To determine the performance of nurses in intensive care in the field of feeding through NGT, Table (1) was drawn. The Table shows the absolute and percentage frequency distribution of the participants according to the replies to performance questionnaire. As can be seen in the Table, the highest mean is related to item 19 (NGT replacement every 72 hours). To keep gavage syringes clean is placed in second with the mean of 3.6. So ICU nurses received the highest score in the field of the prevention of infection and tubal obstruction. In addition, the lowest mean is related to item 13. 62.2% of nurses always washed NGT tube after food and medicine

gavage, but only 29.4% washed the tube before gavage.

Table (2) was also set to determine the relationship between the performance of the feeding skills and personal characteristics (age, sex, marital status, education level, work experience, status, type of contract, overtime, name of hospital, shift). The results substantiated that there was no significant relationship between individual performance and the features and that the nurses in this study had relatively good performance despite individual differences.

DISCUSSION AND CONCLUSION

In this study, the overall score of the nurses' performance in the field of tube feeding was 58.21 ± 8.98 i.e. the nurses obtained 76.5% of the score and that their performance was relatively good. The highest mean is related to item 19 (NGT replacement every 72 hours). To keep gavage syringes clean is placed in second with the mean of 3.6. So ICU nurses received the highest score in the field of the prevention of infection and tubal obstruction. Persenius (2006) examined the nurses' performance using Checklist and concluded that in 30 cases out of 40 cases of clinical observation, 75% of syringes were changed daily and in 36 of 40 observations, 90% of syringes were kept dry. Persenius et al (2006) also reported that in 38 cases of 40 observations i.e. 95% of clinical observation, ICU nurses used one syringe to administer both drug and food and to control gastric residual volume and used no tags for the tubes (11). Compliance with the above principles (keeping the syringes dry and changing them daily and labeling them) seems to be essential to control infection. In 1986, the World Health Organization suggested that the relationship between infections and malnutrition is a synergistic relationship. Nutrition is a critical indicator in determining the immune response and that and malnutrition is the most common cause of immune deficiency all over the world. Protein-energy malnutrition has shown a significant relationship with impaired immune system. In

addition, infections have also adverse effects on nutritional status of an individual (12).

The lowest mean corresponds to item 13 (washing the tube with warm water prior to each food and drug administration gavage) and only 29.4% of nurses washed the tube before gavage. The result of this study is consistent with that of the study by Mateo (1996). In the study performed by Mateo (1996), 94% of nurses reported that they regularly washed the tube. 29% of them said they washed the tube before feeding and 43% washed the tube after feeding. 59% of them washed the tube every 4 hours. Nurses also washed the tubes when administering medications. 47%, 95%, and 39% washed the tubes before, after, and during the drug administration, respectively (13). Although experts usually emphasize the importance of washing the tube before and after medication, Seifert reported that only 69% of nurses washed the tubes before administering the drug, while 98% of them washed the tubes before after drug administration (14). This is in line with the results of the present study.

Findings from this study indicate that there is no significant relationship between individual performance and features, and that the nurses in this study have relatively good performance despite individual differences.

The results are not consistent with the results of the studies by Chan et al. (2012) and Ahmad et al. (2012). In the study by Chan (2012), significant differences were observed in the selection of appropriate methods for the location and type of tubes and the nurses' status so that in the sections where tube feeding was most used, nurses were better and sounder. Also, in this case the performances of the nurses were better than educational nurses (9). Moreover, in the study conducted by Ahmad et al. (2012), nurses in intensive care unit and male nurses were significantly better than other nurses and female nurses (10).

As the prescription of food is done by doctors and nutritionists, a lot of nurses assume they do not have direct responsibility in this regard (15),

which can affect their perception and performance in the implementation of nutrition. Gould (1994) argued that most nurses do less than what they have been trained for in practice because they forget what they have learned to do. He emphasized the need for continuous training. Mere knowledge does not lead to improved attitude and performance because facilities and environmental conditions affect the performance too (16). Inappropriate performance can be due to reasons such as inadequate staffing, lack of control and monitor the performance of personnel, lack of facilities, lack of trained and experienced personnel, lack of awareness, and lack of in-service training and orientation sessions for staffs. In order to improve the quality of care, it is essential that hospital administrators do some measures in the field of motivation and positive attitude towards proper implementation of nursing actions in addition to removing the causes of the problems. As research conducted in Khorramabad shows, motivation is the most important factor on labor productivity and the quality of care (17). To improve the quality of services, how to do these measures should be evaluated. Therefore, to improve the quality and effectiveness of cares, such evaluation is of vital importance. For this purpose, there should be a benchmark to see how to compare such cares with. This criterion is called standard evaluation. The implementation of policies and standards of care can greatly reduce the amount of restricted feeding (16). If there is continuous and appropriate evaluation system, nurses are trying their professional skills to operate in practice (18).

ACKNOWLEDGEMENT

This article was extracted from the graduate thesis and approved by the Deputy of Research and Technology No. 92.191 at Kerman University of Medical Sciences. The authors appreciate and thank all the distinguished staff of nurses in intensive care unit (ICU) in the teaching hospitals of Kerman University of Medical Sciences.

Table 1: frequency distribution and percentage of the participants in terms of how to respond to the questionnaire.

Row	Items	Never	Seldom	Sometimes	Often	Always	Mean	SD
		No. Percentage	No. Percentage	No. Percentage	No. Percentage	No. Percentage		
1	The use of special proton or instruction about tube feeding	1 0.8	2 1.7	10 8.4	30 25.2	76 63.9	3.52	0.77
2	Feeding in the first 24 to 48 hours after patients addition to ICU after stabilizing hemodynamic status	3 2.5	10 8.4	10 8.4	48 40.3	48 40.3	3.05	1.07
3	Considering bowel sounds to start tube feeding	11 9.2	10 8.4	24 20.2	27 22.7	39.5 47	2.82	1.29
4	Replacing the gavage syringes with a new one daily	16 19	15 12.6	31 26.1	31 26.1	23 19.3	2.24	1.33
5	Keeping gavage syringes clean		1 0.8	8 6.7	30 25.2	80 67.2	3.6	0.65
6	Ensuring the location of NGT before feeding by injection of 20 cc of air and listening to stomach	26 21.8	12 10.1	20 16.8	23 19.3	38 31.9	2.35	1.5
7	injection of 20 cc air or water before removing the NGT tube	26 21.8	12 10.1	20 16.8	23 19.3	38 31.9	2.35	1.5
8	Controlling the location of the tube before each feeding	3 2.5	3 2.5	12 10.1	26 21.8	75 63	3.46	0.92
9	Bringing up the head of the bed 30 to 45 degrees when running tube feeding	12 10.1	33 27.7	74 62.2	12 10.1	33 27.7	3.55	0.66
10	Controlling the remaining volume of stomach before the gavage of feeding nutrient solution for tolerance	2 1.7	5 4.2	15 12.6	24 20.2	73 61.3	3.35	0.97
11	Adjourning the feeding to a later time, when the remaining volume of gastric is more than 200 cc is			15 12.6	35 29.4	69 58	3.45	0.71
12	Returning the contents aspirated and continuing the feeding when gastric residual volume is less than 200 cc	19 16	14 11.8	16 13.4	39 32.8	31 26.1	2.41	1.41
13	Washing the tubes with lukewarm water prior to each food and drug administration gavage	22 18.5	20 16.8	21 17.6	21 17.6	35 29.4	2.23	1.49

14	Washing the tubes with lukewarm water after each food and drug administration gavage	3 5.2	4 3.4	12 10.1	26 21.8	74 62.2	3.35	1.02
15	Wash the NGT blocked first with lukewarm water	13 10.9	15 12.6	15.1 18	37 31.1	36 30.3	2.58	1.32
16	Complete replacement of NGT blocked		5 4.2	7 5.9	25 21	82 68.9	3.54	0.79
17	Examining the symptom of pulmonary aspiration when executing feeding		1 0.8	11 9.2	31 26.1	76 63.9	3.52	0.7
18	Gavage of nutrient solution using gravity	2 2.7	6 5	19 16	36 30.3	56 47.1	3.16	0.97
19	Replacement of NGT every 72 hours	11 9.2	22 18.5	15 12.6	14 11.8	57 47.9	3.73	1.44

Table 2: the relationship between performance and demographic characteristics

P-value	Statistical test	Performance score	Percentage	Number	Individual variations	
0/12	Pearson correlation coefficient 0/085	58/21±8/98			31/98±6/15	Age
0/28	t-test	58/46±9/16	92/4	110	Female	Gender
		55/11±5/92	7/6	9	مرد-male	
0/73	t-test	58/78±8/21	19/3	23	Single	Marital status
		58/07±9/2	80/7	96	Married	
0/5	t-test	58/31±9/09	96/6	115	Bachelor	Level of education
		55/25±4/5	3/4	4	Masters' and higher	
0/85	ANOVA	57/53 ± 8/53	53/8	64	Less than 5 years	Work experience
		58/75 ± 9/66	30/3	36	5-10 years	
		58/25 ± 7/22	6/7	8	10-15 years	
		61/25 ± 10/29	6/7	8	15-20 years	
		58± 1/14	2/5	3	Over 20 years	
0/25	t-test	58/08 ± 9	98/3	117	Nurse	Job status
		65/5 ± 3/53	1/7	2	Supervisor	
0/47	ANOVA	56/94 ± 10/56	30/3	36	A	Hospital
		58/37 ± 8/55	53/8	64	B	
		60/05 ± 7/03	16	19	C	
0/16	t-test	57/84 ± 9/14	90	108	Yes	Overwork
		61/82 ± 6/57	10	11	No	
0/49	ANOVA	58 ± 8/41	16	19	Official	Kind of contract
		58/31 ± 9/2	47/9	57	Semi-official	
		59/26 ± 8/89	28/6	34	Contractual	
		54 ± 9/34	7/6	9	Projective	
0/06	ANOVA	57/37 ± 8/09	6/7	8	Morning fixed	Kind of shift
		43/5 ± 0/71	1/7	2	Night fixed	
		58/54 ± 8/93	91/6	109	Rotational	

REFERENCES

1. Mosazadeh, S., Khaleghdoost, T., Hasavari, F. and Kazemnejad E., (2011), Study the chance of respiratory aspiration in intermittent bolus tube feeding in ICU and Trauma ward patients, *Holistic Nursing and Midwifery Journal*, 21 (66)
2. Reid C. Frequency of under- and overfeeding in mechanically ventilated ICU patients: causes and possible consequences. *Journal of Human Nutrition and Dietetics*. 2006;19(1):13-22.
3. Elpern EH, Stutz L, Peterson S, Gurka DP, Skipper A. Outcomes Associated With Enteral Tube Feedings in a Medical Intensive Care Unit. *American Journal of Critical Care*. 2004 May 1, 2004;13(3):221-7.
4. Urden LD, Stacy KM, Lough ME. *critical care nursing diagnosis and management*. 6, editor: Mosbey Elsevier; 2010
5. Hosseinpour-Niazi S (MSc), Naderi Z (MSc), Hosseinpour-Niazi N (BS), Delshad M (MSc), Mirmiran P (PhD) and Azizi F (MD), (2011), Prevalence of malnutrition in hospitalized patients in Taleghani hospital in Tehran, *Journal of Gorgan University of Medical Sciences*, 13 (4) :97-106
6. H after, the rare, H. Penn, M. Dilshad, Mirmiran P, Azizi F. The prevalence of malnutrition in hospitalized patients Tehran Taleghani. 1390; 13 (4): 106-97.
7. Whelan K, Hill L, Preedy VR, Judd PA, Taylor MA. Formula delivery in patients receiving enteral tube feeding on general hospital wards: the impact of nasogastric extubation and diarrhea. *Nutrition*. 2006 10//;22(10):1025-31.
8. Marshall AP, West SH. Enteral feeding in the critically ill: Are nursing practices contributing to hypocaloric feeding? *Intensive and Critical Care Nursing*. 2006;22(2):95-105.
9. Gupta B, Agrawal P, Soni K, Yadav V, Dhakal R, Khurana S, et al. Enteral nutrition practices in the intensive care unit: Understanding of nursing practices and perspectives. *Journal of anaesthesiology, clinical pharmacology*. 2012;28(1):41.
10. Chan E-Y, Ng IH-L, Tan SL-H, Jabin K, Lee L-N, Ang C-C. Nasogastric feeding practices: A survey using clinical scenarios. *International Journal of Nursing Studies*. 2012;49(3):310-9.
11. Ahmad S, Le V, Kaitha S, Morton J, Ali T. Nasogastric Tube Feedings and Gastric Residual Volume: A Regional Survey. *Southern medical journal*. 2012;105(8):394-8.
12. Wentzel Persenius M, Larsson BW, Hall-Lord M-L. Enteral nutrition in intensive care: Nurses' perceptions and bedside observations. *Intensive and Critical Care Nursing*. 94-82:(2)22;2006 .
13. Kouhkan A, Pourpak Z, Moin M, Dorosty AR, Alizadeh RS, Teimorian S, et al. A study of malnutrition in Iranian patients with primary antibody deficiency. *Iranian Journal of Allergy, Asthma and Immunology*. 2004;3(4).
14. Mateo MA. Nursing management of enteral tube feedings. *Heart & lung : the journal of critical care*. 1996 Jul-Aug;25(4):318-23. PubMed PMID: 8836748. Epub 1996/07/01. eng.
15. Seifert CF, Frye JL, Belknap DC, Anderson DC, Jr. A nursing survey to determine the characteristics of medication administration through enteral feeding catheters. *Clinical nursing research*. 1995 Aug;4(3):290-305. PubMed PMID: 7633339. Epub 1995/08/01. eng.
16. Roynette CE, Bongers A, Fulbrook P, Albarran JW, Hofman Z. Enteral feeding practices in European ICUs: A survey from the European federation of critical care nursing associations (EfCCNa). *e-SPEN, the European e-Journal of Clinical Nutrition and Metabolism*. 2008;3(2):e33-e9.
17. AA. Abdollahi, H. Rahmani, B. Khodabakhshi, N. Behnampour. Assessment of level of knowledge, attitude and practice of employed nurses to nosocomial infection in teaching hospitals of Golestan University of Medical Sciences (2000). *Journal of Gorgan University of Medical Sciences*. 2003;5(1):80-6. eng % @ 1562-4765.2003]%

18. Zandyeh M, Falhgari G, Salavsti M and Borzoo S, (2005), Study of applying proposed infection control standards in ICU, Journal of Shahrekord University of Medical Sciences, 6 (4) :79-86
19. Sergio A., (1996), Investigating the understanding and performance of supervisors on their professional skills in hospitals in Kerman in 1996, Kerman