Nurses Practices Related to Enteral and Parenteral Nutritional Therapy for Unconscious Patients

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Knowledge, Enteral, Parenteral, Nutrition, Unconscious Patients

ABSTRACT
Background: Enteral nutrition reduces the mortality rate and prevents the development of pressure sores. Specific complications with parenteral nutrition, particularly in unconscious patients, include line sepsis and fluid and electrolyte imbalance. This is important because parenteral nutrition reduces the duration of unconscious patients' hospital stay. **Objectives:** 1. Assess Nurses' practice regarding unconscious patients' nutrition. 2. Identify the demographical characteristics of studied population. 3. Find out the relations between practices of nurses and their demographical and employment characteristics. **Methodology:** A descriptive – observational study design is the choice to study a specific phenomenon of interest regarding assessing nurses practices regarding enteral and parenteral nutritional therapy from period between (November 2022- July 2024). Non-probability convenient sample of (125) nurses who work in the intensive care units were selected. This study conducted in the intensive care units which located at three teaching hospitals in Al-Hilla city- Iraq. **Results:** The data reveals that the majority, 55.2%, fall within the 20-30 year age range. Interestingly, the sex distribution is nearly equal with 52% males and 48% females. The result recorded the major of study sample were poor level of practice regarding enteral and parenteral nutritional therapy for unconscious patients. **Conclusion:** There is a substantial need for improvement in nursing practices related to ENT, such as nutritional assessment, equipment preparation, and adherence to protocols.

1. Introduction

Enteral nutrition is one of the modern developments in nutritional therapy which is intended to maintain or regain the nutritional status of patients. It involves the administration of nutrients into the GI tract. With respect to conscious patients, enteral nutrition has been performed by various dietary modifications and special oral nutritional supplements. However, in unconscious patients, enteral access devices are required to administer enteral nutrition, beginning with nasogastric tubes. Nasogastric tubes are still commonly used these days. However, nasojejunal tubes or more permanent feeding tubes are often necessary in patients who have feeding intolerance or for those who have been established on long-term nutritional support (Broekaert, 2019).

During the nutrition support therapy, it is important to reassess the patient's status and the indication for continued therapy. To achieve the beneficial outcome of the nutrition support on the patient's health status, the indication will be reassessed for the therapy that potentially will change the patient's condition. The effectiveness of the nutrition support can be determined from the patient's condition. If the nutrition support is effective, the patient's nutrition status will be improved, or the expected goals can be achieved. Conversely, if the therapy fails, then the therapy should be stopped and changed to another approach. These guidelines will help change an ineffective nutrition support therapy to another more effective therapy by stopping the therapy that is not getting the expected result (Taylor, 2016).

American Society for Nutrition (ASPEN) Board of Directors adopted the practice guidelines to provide basic principles and approaches to care by which the services of nutrition support are addressed. These guidelines are based on expert opinion, where evidence is lacking, and cover various aspects of nutritional support care. They include assessment of the patient's needs, formulation of a nutrition care plan, management of resources, and quality of care. These comprehensive guidelines form the method of nutrition assessment and support, potentially improving the patient's nutrition status and quality of care. These guidelines are extra helpful for the

healthcare team in determining the potential improvement in the patient's condition after a course of nutrition support (Corrigan, 2021).

Step one in planning a personalized nutritional regime for an unconscious patient is to screen for malnutrition risk. This needs to be done as soon as possible after admission to any healthcare facility. Once diagnosed, ongoing detailed nutrition assessment is needed to successfully monitor changes in nutrition status and the effectiveness of any nutrition intervention. This involves collection of information on various factors, including but not limited to: symptoms affecting food intake and appetite, recent changes in weight, and planned or recent surgery. The information is then interpreted to make a diagnosis and create a nutrition prescription, which is then implemented with regular monitoring and review (Andersen, 2021) (El Ansari, 2021).

Personalized nutritional therapy focuses on tailoring the most appropriate nutritional regime for the patient. Research into nutrigenomics, which is the effect of nutrition on the genome, has provided much opportunity for improving the nutritional intake of patients through a better understanding of how patients' metabolism of nutrients may differ during various disease states. This information provides an opportunity to tailor the type and amount of nutrients to the patient's specific requirements. Various factors need to be considered when working out a nutritional plan (Singh, 2023). Nutrients may be given in forms that range from a normal diet, through modified consistencies, to enteral and parenteral nutrition. The site of delivery of the nutrients is dictated by the patient's ability to safely receive nutrients via the chosen route. For those with a functioning gastrointestinal tract, enteral feeding is generally the preferred option due to reduced risk of infection, cost, and it closely mimics normal eating and digestion (Ojo, 2020).

A person's unconsciousness poses very little comfort for them or the person who take care of them. Such patients are unable to feed by themselves and are at risk of malnutrition. An unconscious state may result from several different causes and usually requires enteral or parenteral nutrition. The nurse plays a vital role in assessing the need for nutritional therapy, choosing the appropriate method and ongoing care of the patient while receiving enteral or parenteral nutrition (Worthington, 2017).

Objectives

Assess nurses' practices regarding unconscious patients' nutrition. Find out the association between nurses' practices, and their demographical and employment characteristics.

2. Methodology

A descriptive – observational-cross sectional study design is the choice to study a specific phenomenon of interest regarding assessing nurses practices regarding enteral and parenteral nutritional therapy from period between (November 2022- July 2024). This study conducted in the intensive care units which located at three teaching hospitals in Al-Hilla city- Iraq.

Non-probability convenient sample of (125) nurses out of (220) who work in the intensive care units were selected related to Yamane formula. The Yamane formula is particularly useful when dealing with large populations, as it provides a practical method to determine a representative sample without requiring complex statistical calculations. However, it's essential to note that the Yamane formula assumes a specific level of confidence (typically 95%) and a maximum margin of error (often 5%). Researchers should carefully consider these parameters when applying the formula to ensure the sample size is adequate for their study's objectives (Umar, 2021). For assessing the nurses practices regarding enteral and parenteral nutritional therapy for unconscious patients, special checklist prepared after comprehensive reviewing of related literatures. Standard checklist from ASPEN was adopted after making some modifications to make it suitable for intensive care unit's nurses, it divided to:

Part I:

This part consist demographical characteristics of the study sample includes: (5) Items: (age, sex, marital status, educational qualification, residency).

Part II:

This part include general information related to (Years of experience, and years of experience in ICU, working shift, special courses related to enteral and parenteral nutrition)

Part III Checklist:

1. Assessment (4 items)
2. Equipment (4 items)
3. Pre-procedure (6 items)
4. Performance (8 items)
5. Evaluation (1 item)

Rating and Scoring:

For the practical checklist rating and scoring the following method were established: Three points Likert scales used for rating and scoring of enteral and parenteral nutritional therapy the domain items which scored as (Always=3), (Sometimes=2), and (Never=1).

Preliminary Study (pilot):

A preliminary study (pilot) conducted between 11th March to 15th of June 2024, to determine the reliability of the checklist. (10) nurses who work in the intensive care unit were included the study, after obtaining an agreement to participate in the study from them, each participant exposed to three observations from three observers at the same time. Those (10) nurses alienated from the original sample.

The following points can be inserted to crystalize the benefits of the pilot study:

1. To determine the reliability of the study checklist.
2. To find out whether the contents of the checklist clear, understandable and easy in practice.
3. To estimate the average time which may needed for complete the individual checklist

Reliability of the Checklist:

In statistic, inter-observer or inter rater method used to obtain reliability in order to determine the stability of the study tool which scored of how much homogeneity or consensus exists in the ratings given by various judges (Souza, 2017). Two colleagues who graduate from college of nursing asked to assist in performing this step, each nurse who participate in the pilot study exposed to observation from three observers at the same time for each practice, each participant has three observations for each practice. The reliability of the checklist calculated by special equation, the statistical results recorded (r: 0.817), which statistically is accepted.

Ethical Consideration:

Ethical consideration in quantitative research is an important element, this type of research commonly uses human subjects. The consent often obtained verbally (oral or written), depends on the nature of the study, this kind of an ethical grade may protect participant's confidentiality and dignity. A formal agreement obtained from the study sample regarding a specific agreement form.

Data Collection:

A specific checklist was adopted for assessing the practical part which needs two to seven days for three observations to be completed for each participant. The data collection extended for about (94) days, it was started since (11th of March until 15 June. 2024).

4. Results and Discussion

Table 1: Distribution of Demographic Characteristics of the Study Sample

Demographic Data	Rating and intervals	Frequency	Percent
Age	20-30years	69	55.2
	31-40years	35	28.0
	41-50 years	21	16.8
	Total	125	100.0
Sex	male	65	52.0
	female	60	48.0
	Total	125	100.0
Marital status	Married	77	61.6
	Single	48	38.4
	Total	125	100.0
Educational qualification	Secondary school nursing	24	19.2
	Diploma in nursing	53	42.4
	Bachelors in nursing	47	37.6
	Postgraduate in nursing	1	.8
	Total	125	100.0
Residency	Rural	78	62.4
	Urban	47	37.6
	Total	125	100.0

Table 2: Distribution of Employment Characteristics of the Study Sample

Employment Characteristics	Rating And Intervals	Frequency	Percent
Years of Employment	less than or equal 5 years	80	64.0
	6-10years	28	22.4
	11-15 years	8	6.4
	16-20 years	9	7.2
	Total	125	100.0
Years of employment in ICU	less than or equal50 years	109	87.2
	6-10years	7	5.6
	11-15 years	6	4.8
	16-20 years	3	2.4
	Total	125	100.0
Working shift:	Morning	90	72.0
	Evening	35	28.0
	Total	125	100.0
special courses	No	95	76.0
	Yes	30	24.0
	Total	125	100.0

If yes	no there	95	76.0
	1 courses	22	17.6
	2 courses	6	4.8
	≥3 courses	2	1.6
	Total	125	100.0

Table 3: Assessment of Nursing Practice Regarding Enteral and Parenteral Nutritional Therapy for Unconscious Patients

Items		**Frequency**	**Percent**	**Mean**	**S.D**	**Assess**
Assessment						
Nutritional needs assessed properly	never	60	48.0	1.58	.612	Poor
	sometimes	57	45.6			
	always	8	6.4			
	Total	125	100.0			
The nutrition prescribed by the nutritionist	never	77	61.6	1.58	.805	Poor
	sometimes	23	18.4			
	always	25	20.0			
	Total	125	100.0			
Amount of the calories calculated for each patient	never	80	64.0	1.58	.835	Poor
	sometimes	17	13.6			
	always	28	22.4			
	Total	125	100.0			
Types of food selected according to patient's needs	never	61	48.8	1.66	.720	Poor
	sometimes	46	36.8			
	always	18	14.4			
	Total	125	100.0			
Equipment						

Preparing feeding solution bag	never	52	41.6	1.88	.839	Fair
	sometimes	36	28.8			
	always	37	29.6			
	Total	125	100.0			
Preparing administration set	never	85	68.0	1.46	.724	Poor
	sometimes	23	18.4			
	always	17	13.6			
	Total	125	100.0			
Preparing alcohol cotton swap	never	119	95.2	1.05	.215	Poor
	sometimes	6	4.8			
	Total	125	100.0			
Preparing dressing set	never	65	52.0	1.59	.685	Poor
	sometimes	46	36.8			
	always	14	11.2			
	Total	125	100.0			
Pre-procedure						
Hand washing	never	117	93.6	1.06	.246	Poor
	sometimes	8	6.4			
	Total	125	100.0			
Identify the patient	never	110	88.0	1.18	.509	Poor
	sometimes	8	6.4			
	always	7	5.6			
	Total	125	100.0			
Provide patient’s privacy	never	77	61.6	1.49	.6	Poor

	sometimes	35	28.0		79	
	always	13	10.4			
	Total	125	100.0			
Compare type & amount of solution	never	72	57.6	1.46	.576	Poor
	sometimes	48	38.4			
	always	5	4.0			
	Total	125	100.0			
Check feeding solution bag	never	91	72.8	1.53	1.161	Poor
	sometimes	10	8.0			
	always	24	19.2			
	Total	125	100.0			
Check for any types of food allergy	never	94	75.2	1.33	.619	Poor
	sometimes	21	16.8			
	always	10	8.0			
	Total	125	100.0			
Performance						
Wear gloves	never	99	79.2	1.30	.638	Poor
	sometimes	14	11.2			
	always	12	9.6			
	Total	125	100.0			
Prepare the TPN solutions	never	112	89.6	1.14	.428	Poor
	sometimes	9	7.2			
	always	4	3.2			
	Total	125	100.0			

Inspect the bag carefully for tear or leaks	never	93	74.4	1.43	.776	Poor
	sometimes	10	8.0			
	always	22	17.6			
	Total	125	100.0			
Examine the bag for any discoloration, cloudiness	never	87	69.6	1.49	.789	Poor
	sometimes	15	12.0			
	always	23	18.4			
	Total	125	100.0			
Using aseptic technique, attach tubing to appropriate IV line	never	93	74.4	1.33	.606	Poor
	sometimes	23	18.4			
	always	9	7.2			
	Total	125	100.0			
Discard the empty nutrition bag	never	77	61.6	1.39	.506	Poor
	sometimes	47	37.6			
	always	1	.8			
	Total	125	100.0			
Remove gloves	never	69	55.2	1.62	.760	Poor
	sometimes	35	28.0			
	always	21	16.8			
	Total	125	100.0			
Wash hands	never	78	62.4	1.50	.703	Poor
	sometimes	32	25.6			
	always	15	12.0			
	Total	125	100.0			

Evaluation						
Evaluate the patient for any reactions	never	74	59.2	1.66	.861	Poor
	sometimes	19	15.2			
	always	32	25.6			
	Total	125	100.0			
General mean and standard deviation				1.44	0.63	Poor

Poor level 1-1.6 fair level 1.7-2.3 good level 2.4-3

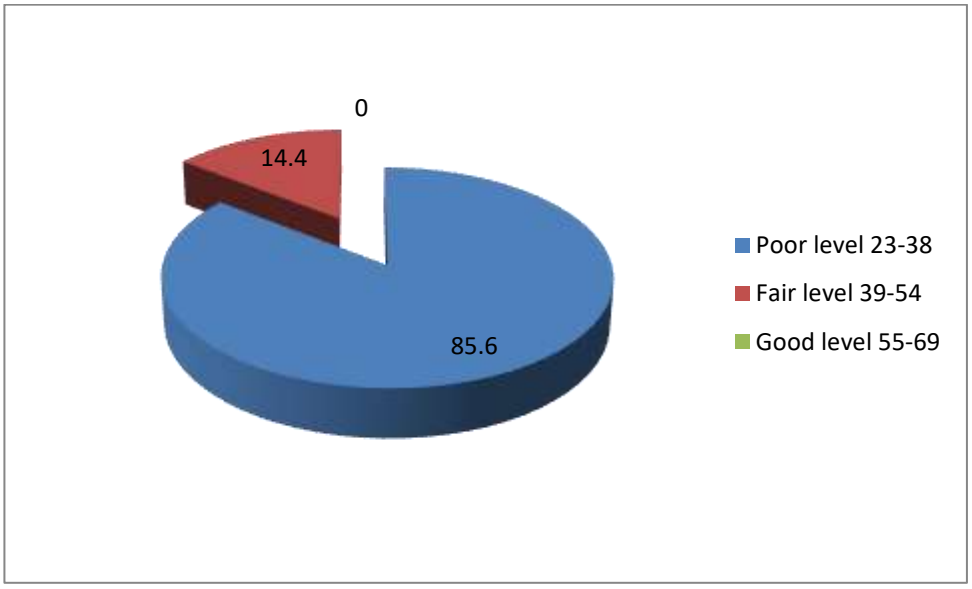

Figure 1: Distribution of Nurses Practices Regarding Enteral and Parenteral Nutritional Therapy for Unconscious Patients

Table 4: Correlation Between Overall Practices of the Nurses and Their Demographical Characteristics

No	Parameter	R	p.value
1	Overall practice Age	.101	.261[c]
2	Overall practice Sex	-.175	.051
3	Overall practice Educational Qualification	-.143	.103
4	Overall practice Residence	.116	.197

Table 5: Correlation Between Overall Practices of The Nurses and Their Employment Characteristics

No	Parameter	R	p.value
1	Overall practice Years of employment in ICU	.202	.024
2	Overall practice Working shift	-.175	.051
3	Overall practice Special training	-.143	.103

Table 6: Correlation Between Overall Practices of The Nurses and Their Employment Characteristics

No	Parameter	R	p.value
1	Overall practice Years of employment in ICU	.202	.024
2	Overall practice Working shift	-.175	.051
3	Overall practice Special training	-.143	.103

Nursing practices regarding enteral and parenteral nutritional therapy for unconscious patients present in table (3) the mean score (1.44) drops within the "poor" category related to the designated cut-off point, and It shows a significant poor practice level regarding enteral and parenteral nutritional therapy, studies done by McClave(2020), and Aguirre (2019) highlight the importance of individualized nutritional assessment and following physician orders, another studies by Elia (2007) and Stratton et al. (2018) highlight the importance of individualized calorie calculations and monitoring patient tolerances when selecting enteral formulas, while studies done by Dowdy (2018) and Infusion Nurses Society (INS) (2016) highlight best practices for preparing and using equipment for enteral feeding, ASPEN (2020) outlines recommendations regarding monitoring TPN receiving patients.

The results of Table 3 highlight a critical need for improvement in nurses' practices regarding ENT for unconscious patients. Comparisons with other studies suggest this may be a widespread issue. Nurses need a strong foundation in evidence-based practices for enteral feeding and TPN administration.

Table. 4. Overall nurses' practices regarding enteral and parenteral nutritional therapy for unconscious patients. This study reveals a very high percentage (85.6%) of nurses falling within the "poor" practice category. This indicates a widespread need for improvement in nurses' adherence to evidence-based practices for enteral and parenteral administration, studies done by Correia (2017), and Wilson et al. (2018), also highlight concerning practices among nurses in respect to enteral feeding and TPN administration.

Table 5. presents correlation coefficients (R) and p-values to analyze the relationship between nurses' overall practices in enteral and parenteral nutrition (ENT) and their demographic characteristics.

- **Age:** The correlation coefficient (R = -.175) and p-value (p = .051) suggest no statistically significant association between nurses' age and their overall ENT practices. This partially aligns with findings on knowledge, where some studies (Correia, 2017) show no link between age and knowledge, while others (Wilson, 2018) suggest a positive correlation between experience (linked to age) and knowledge.
- **Sex:** The correlation coefficient (R = -.143) and p-value (p = .103) indicate no significant association between nurses' sex and their overall ENT practices. This aligns with research on knowledge, where studies by Driscoll (2017) and Aguirre et al. (2019) found no significant influence of sex on knowledge scores.
- **Educational Qualification:** The correlation coefficient (R = .116) and p-value (p = .197) suggest no statistically significant association between nurses' educational qualifications and their overall ENT practices. Limited research directly explores this specific link, although studies on knowledge (Wilson et al., 2018; Correia et al., 2017) hint at a possible positive association between experience (linked to some qualifications) and knowledge.

Table 6. explores the relationship between nurses' overall practices in "enteral and parenteral nutrition" and various aspects of their employment in "intensive care units". Here's a breakdown of the key findings and how they compare with other studies:

Potential Positive Correlation:

- **Years of ICU Experience:** The correlation coefficient (R = .202) and p-value (p = .024) suggest a potential positive association between nurses' years working in an ICU and their overall ENT practices. While not exceptionally strong, this aligns with findings on knowledge (Wilson et al., 2018; Correia et al., 2017) where experience (often linked to ICU work)

correlated positively with knowledge of ENT. Nurses with more ICU experience likely have more opportunities to practice and refine their ENT skills.

- **Working Shift:** The correlation coefficient (R = -.143) and p-value (p = .103) indicate no statistically significant association between the shift nurses work (e.g., day, night) and their overall ENT practices. Limited research explores the impact of specific work shifts on nurses' practices in this area.

5. Conclusion

There is a substantial need for improvement in nursing practices related to ENT, such as nutritional assessment, equipment preparation, and adherence to protocols.

Recommendations:

1- **Strengthened Educational Initiatives:** Develop and implement comprehensive educational programs tailored to the specific knowledge areas. Theoretical knowledge and practical training should be included in such programs.

2- **Mentorship and Clinical Supervision:** Mutual collaboration between college of nursing and the health director by establishing mentorship and preceptorship to provide ongoing support and continuous guidance for nurses caring for critically ill patient with nutritional therapy needs.

3- **Standardized Protocols and Guidelines:** Develop clear and accessible evidence based protocols from national and international guidelines for enteral and parenteral nutritional therapy to ensure improved competencies in nursing practice.

4- **Continuous Quality Improvement:** By implementing a regular monitoring system to evaluate nurses' knowledge and practices for identifying areas for improvements.

Targeted Training for ICU Nurses: According to the identified gaps, specific training courses maybe applied to develop ICU nurses' skills, and by continuous education using specific simulations can enhance their enteral parenteral nutritional therapy expertise

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