

Knowledge about Enteral Feeding Among Cardiac Nurses at CCH

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DOI: [10.36348/sjnhc.2022.v05i10.001](https://doi.org/10.36348/sjnhc.2022.v05i10.001)

| Received: 29.07.2022 | Accepted: 01.09.2022 | Published: 07.10.2022

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Abstract

Background: Patients need enough food to recover from any disease. Patients with serious illnesses have high nutritional requirements and can become malnourished very quickly. Research findings suggest that early nutrition is important for patient outcomes. The nutritional needs of all patients are reviewed daily and nutrition is initiated as soon as possible, usually on the first day of admission. In critical care areas, enteral feeding is used to overcome malnutrition conditions and to keep patient in the safety side. Therefore, enteral nutrition is considered an easier method and cheaper when compared to parenteral nutrition which has more complications and costlier, additionally, having enough knowledge about enteral nutrition by the nurses is considered very crucial to administer the enteral feeding to patients in the proper way at the critical care units. **Method:** Non-experimental, cross-sectional research design which will identify nurses' knowledge regarding enteral feeding among cardiac nurses at CCH. The study will describe knowledge by using a quantitative method. The research will be conducted in Cardiac Center Hail, Ha'il Region, Kingdom of Saudi Arabia, and will focus on all cardiac nursing care units. **Results:** The data obtained from this study were analyzed using the Statistical Package for Social Science (SPSS) 25.0 program. A descriptive statistical analysis using means, frequencies, percentages, and standard deviations was used to describe the demographic variables and answer question 1. Kruskal-Wallis was used to determine if there are significant differences among the means of the groups (more than two groups) and Mann-Whitney (independent-samples) for questions 2, because the data doesn't follow normality distribution, where of the Table 2, we find that the significance level of the Kolmogorov-Smirnov test was less than 0.05. This leads us to reject the null hypothesis that the data follow the normal distribution, so we used nonparametric tests. **Conclusion:** The nurses' knowledge regarding enteral nutrition at the cardiac nursing units were enough under safe practices. The in-short activities of Continuing Nursing Education had a positive effect in improving the nurses' knowledge and practices regarding enteral nutrition in the in-patients' departments at Cardiac Center Hail.

Keywords: Enteral Feeding, Enteral Nutrition, Cardiac Nurses, Cardiac Center.

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INTRODUCTION

Patients need enough food to recover from any disease. Patients with serious illnesses have high nutritional requirements and can become malnourished very quickly. Research findings suggest that early nutrition is important for patient outcomes. The nutritional needs of all patients are reviewed daily and nutrition is initiated as soon as possible, usually on the first day of admission.

The best way to feed the patient is to use his or her digestive system (stomach and intestines). Gastrointestinal feeding is called gastrointestinal feeding. We also refer to this as feeding through the gastrointestinal tract. Because patients cannot swallow

food if they have a tube to breathe in their throats, they are fed through the feeding tube. A tailor-made solution containing the nutrients the patient needs to recover is provided. Most feeding tubes are inserted into the nose or mouth, and the tube is inserted into the stomach. Feed is mixed in a sterile bag and given as a fixed syringe lasting 24 hours a day. A pump similar to an intravenous pump is used to connect the feeding solution.

When patients are in critical condition, the digestive system may not function properly. Food in the stomach may not be emptied to the intestines as it should. Food that does not move from the stomach can enter the lung, this is called aspiration. Aspiration is a

serious complication that can cause pneumonia. Food that does not leave the stomach and enters the intestine will not meet the patient's dietary requirements. The feeding tubes in the small intestine reduce the risk of aspiration and encourage more successful feeding.

Despite efforts to promote successful intestinal nutrition, the patient cannot feed through the digestive system, the patient may need to be fed by a special venous formula called Total Parenteral Nutrition or TPN. TPN contains carbohydrates, fats and protein. Two concentrations of sugar preparation (called dextrose) are provided. The low concentration is called Peripheral TPN (PTPN). It can be administered safely in small peripheral veins, however, may not provide enough calories to meet the needs of a sick patient. The central TPN (CTPN) has a higher concentration of dextrose, so, it provides more calories.

PROBLEM STATEMENT

Enteral feeding consists of multi steps, which could lead to different complications with insufficient nurses' knowledge. Therefore, to ensure the patient safety, nurses required to have a good and satisfactory knowledge about NGT care, insertion, removal, and feeding, in addition to the need to adhere to infection control policy that's could prevent associated infection.

SIGNIFICANCE OF THE STUDY

In critical care areas, enteral feeding is used to overcome malnutrition conditions and to keep patient in the safety side. Therefore, enteral nutrition is considered an easier method and cheaper when compared to parenteral nutrition which has more complications and costlier, additionally, having enough knowledge about enteral nutrition by the nurses is considered very crucial to administer the enteral feeding to patients in the proper way at the critical care units.

AIMS

The overall aim of the current study is to examine the level of nurses' knowledge regarding enteral feeding in the critical care departments of CCH.

RESEARCH QUESTIONS

To achieve the aim of this study, the following questions should be answered:

Q1 - What is the nursing awareness about nasogastric tube feeding?

Q2 -What is the correlation between demographic characteristics and level of nursing knowledge about nasogastric tube feeding?

REVIEW OF LITERATURE

Adequate nutritional support is important for the comprehensive management of patients in intensive care units (ICUs). According to Mehta, N. M., McAleer (2012) the aim of the study was aimed to survey prevalent enteral nutrition practices in the trauma intensive care unit, nurses' perception, and their

knowledge of enteral feeding. The study was conducted in the ICU of a level 1 trauma center, Jai Prakash Narayan Apex Trauma Centre, AIIMS, New Delhi, India. The study design used an audit.

Poor nursing adherence to evidence-based guidelines has negative consequences leading to higher death rates, delayed recovery and longer length of stay. Evidence-based practice has the potential to minimize complications and discrepancies between nurses.

Critical illness may cause hyper-metabolism and adequate nutrition is required to limit power wasting, respiratory and gastrointestinal dysfunction and alterations in immunity¹. In critical illness, feeding behaviors change; patients may experience physical obstruction to swallowing or inability to ingest food. This calls for nurses' attention to be focused on the provision of alternative to oral intake. One of these alternatives is the provision of enteral (tube) feeding. Enteral feeding includes deliver a complete feed via NGT or OGT tube into the stomach or percutaneous tubes into the jejunum or duodenum³. This feeding is associated with a reduced period of hospital stay, reduced mortality, lower costs and fewer complications as compared to parenteral feeding.

According to Ncama (2014), a survey was done to assess the nurses' level of information in enteral feeding, to describe their current practice in enteral feeding certification and to determine challenges experienced in enteral feeding practice. In this study "enteral feeding" was used interchangeably with "tube feeding." The conceptual model guide the study was drawn from the American Association of Critical Care Nurses (AACN) Synergy Model for Patient Care. This model defines nursing practice based on the needs of the patient. The model contends that when nurse competencies relate to patient needs, and the characteristics of the nurse and patient synergies, optimal patient outcomes can result Nursing. The author contends that each patient brings unique needs and characteristics to the clinical situation. Therefore, to meet patient needs, nurses must apply certain characteristics and competencies to patient care. These competencies are identified as: clinical judgment, advocacy and moral agency, caring practices, collaboration, systems thinking, responses to diversity, facilitation of learning, and clinical inquiry. This model was chosen because of its relevance in recognizing nurse competencies as important and that when nurse competencies and patient needs synergize, optimal patient outcome can result, (Ncama & Maluwa, 2014).

Nurses have an important role in the delivery and management of enteral nutrition in critically ill patients, to prevent iatrogenic malnutrition. It is not clear how nurses source enteral nutrition information. According to Julia Morphet, the objective of this study aimed to explore Australian nurses' enteral nutrition

knowledge and sources of information. Data were collected from members of the Australian College of Critical Care Nurses in May 2014 using an online questionnaire. A combination of descriptive statistics and non-parametric analyses were undertaken to evaluate quantitative data. Content analysis was used to evaluate qualitative data. The researcher got the results of 395 responses and included in data analysis. All respondents were Registered Nurses with experience working in an Australian intensive care unit or high dependency unit. Most respondents reported their enteral nutrition knowledge was good (n or excellent) but many lacked knowledge regarding the effect of malnutrition on patient outcomes. Dietitians and hospital protocols were the most valuable sources of enteral nutrition information, but were not consistently utilized (Morphet, 2016).

METHODOLOGY

Study Design

Non-experimental, cross-sectional research design which will identify nurses' knowledge regarding enteral feeding among cardiac nurses at CCH. The study will describe knowledge by using a quantitative method.

Setting of the study

The research will be conducted in Cardiac Center Hail, Ha'il Region, Kingdom of Saudi Arabia, and will focus on all cardiac nursing care units.

Sample

In order to get accurate result of study, all cardiac nurses will be asked to participate in this study optionally.

Tools of data collection

A questionnaire will be used to collect data from participants as a primary source of data. The questionnaire is able to determine a level of participants' knowledge.

Data collection procedures

After getting approval from ethical committee in CCH and Hail Health Cluster, the questionnaires will be kept in nursing station, and explanation of a purpose of study will be demonstrated to all participants. Then, a collection box of questionnaires will be provided in the nursing office. Thereafter, data will be stored within one week from distribution to be ready for analysis.

Data analysis

After data collection, SPSS version 22.0 will be used to analysis all variables after the data entered by researcher. Graphs and charts will be used to help a researcher to identify all variables in this study.

Ethics and human subject protection

All ethical consideration will be followed. Confidentiality and anonymous of participants will be guaranteed. All potential risk will be identified for the participants.

An explanatory statement will be attached to each questionnaire to identify a purpose of study. As well, participants' rights will be explained as they have the right to withdraw from a study at any time.

RESULTS AND DISCUSSION

Characteristics of Demographic participants

Table 1: Characteristics of Demographic Participants

CLASSIFICATION		FREQUENCY	PERCENTAGE
Age	20 to 24 years	6	6.9
	25 to 30 years	46	52.9
	31 to 35 years	20	23.0
	36 to 40 years	9	10.3
	41 to 45 years	6	6.9
Gender	Female	87	100.0
Status	Single	45	51.7
	Married	42	48.3
Experience	1 to 5 years	50	57.5
	6 to 10 years	30	34.5
	11 and above	7	8.0
Educational Level	High School or Diploma Nursing	7	8.0
	BSN	72	82.8
	Post Graduate Nursing	8	9.2
Working Unit	CCU	26	29.9
	CSICU	34	39.1
	CW	21	24.1
	Others	6	6.9
Previous Educational Program	Yes	16	18.4
	No	71	81.6

Table 1 Age shows that 52.9% from sample were their age ranged (25-30), 23.0% (31-35), 10.3% (36-40) and 6.9% for both (20-24) and (41-45).

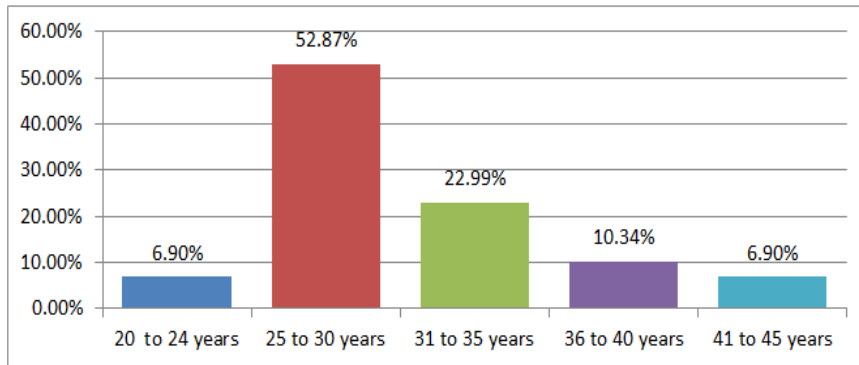


Figure 1: Sample according to age

Table 1 Status shows that 51.7% from sample were single and 48.3% married.

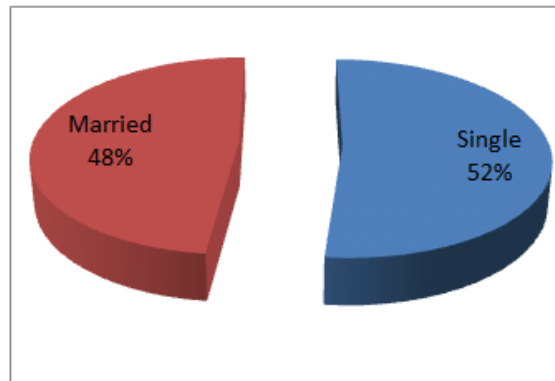


Figure 2: Sample according to marital status

Table 1 Experience shows that 57.5% from sample ranged their experience (1-5) years, 34.5% (6-10) and 8.0% (11 and more)

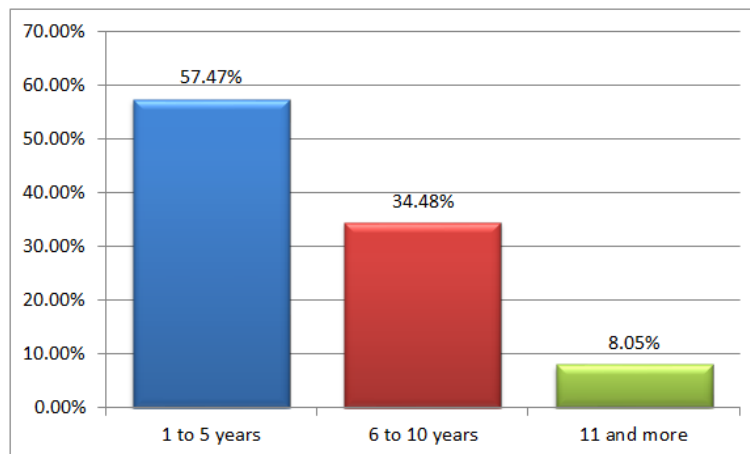


Figure 3: Sample according to experience

Table 1 Qualification shows that 82.8% from sample don't have (BSN), 9.2% (Post graduate nursing education) and 8.0% (High school or Diploma nursing).

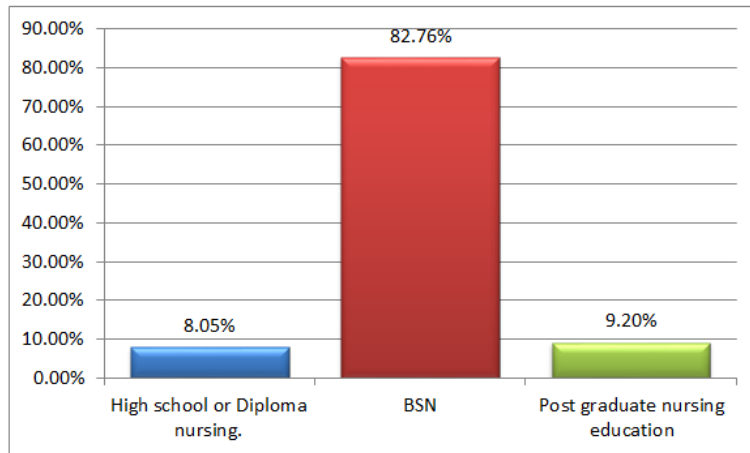


Figure 4: Sample according to qualification

Table 1 Working Unit shows that 39.1% from sample were their Working unit (CSICU), 29.9% (CCU), 24.1% (CW) and 6.9% (Others).

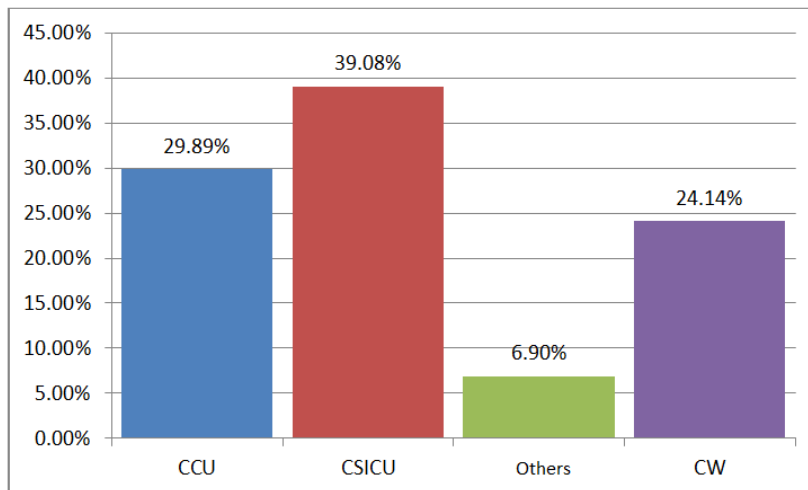


Figure 5: Sample according to working unit

Table 1 Previous Educational Program shows that 81.6% from sample don't have (previous educational program) and 18.4% (yes).

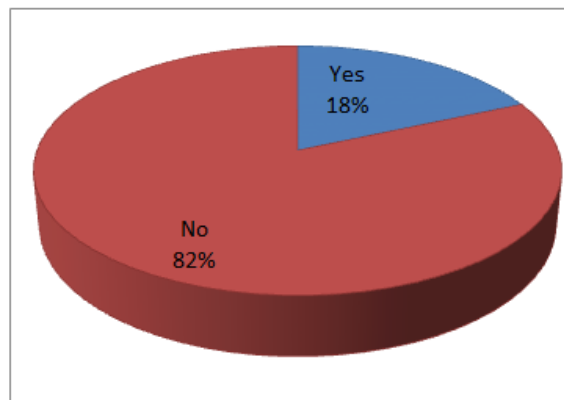


Figure 6: Sample according to previous educational program

Data Analysis:

The data obtained from this study were analyzed using the Statistical Package for Social

Science (SPSS) 25.0 program. A descriptive statistical analysis using means, frequencies, percentages, and

standard deviations was used to describe the demographic variables and answer question 1.

Kruskal-Wallis was used to determine if there are significant differences among the means of the groups (more two groups) and Mann-Whitney

(independent-samples) for questions 2, because the data doesn't follow normality distribution, where of the Table 2, we find that the significance level of the Kolmogorov-Smirnov test was less than 0.05. This leads us to reject the null hypothesis that the data follow the normal distribution, so we used nonparametric tests.

Table 2: Tests of Normality

Total	Kolmogrov - Smirnov		
	Statistic	Df	Sig.
	.283	87	.000

Note: H0: data follows normality distribution. Ha: data doesn't follow normality distribution.

RESEARCH QUESTION 1:

What is the nursing awareness about nasogastric tube feeding?

For answering on this question the researcher used frequencies, percentages, means and standard deviations. Participants answered the questions that have multiple choices (true=1, false=0).

The range between 0 to 1 is classified into three subscales: Mean scores less than 0.34 represent weak awareness, 0.34-0.66 represent moderate awareness and above 0.66 represent high awareness.

As shown in Table 3, the overall mean score of the total awareness scale (M = 0.711, SD = 0.12) was high which indicates that cardiac nurses have high awareness about nasogastric tube feeding. The means of the level of awareness was ranked from the most awareness to the least awareness by cardiac nurses. As shown in Table, the most awareness question was (The proper patient position during nasogastric intubation is) (M = 0.943) in which indicates high awareness for this question. The last question was (Number of trials allowed for a nurse to insert the nasogastric tube is) (M = 0.103) which indicates weak awareness for this question.

Table 3: Awareness Scale

QUESTIONS	RESPONSE	N	%	M	SD	Rank	Level of Awareness
1. Enteral feeding tubes include:	FALSE	19	21.8	0.782	0.42	9	High
	TRUE	68	78.2				
2. The Nasojeunal tube is a feeding tube that extends from:	FALSE	18	20.7	0.793	0.41	8	High
	TRUE	69	79.3				
3. The factors that affect the patients' nutritional needs are:	FALSE	8	9.2	0.908	0.29	5	High
	TRUE	79	90.8				
4. Indication to use Nasogastric tube is:	FALSE	7	8	0.931	0.30	4	High
	TRUE	80	92				
5. The Nasogastric tube feeding is considered:	FALSE	28	32.2	0.678	0.47	11	High
	TRUE	59	67.8				
6. Contraindication of Nasogastric intubation is:	FALSE	36	41.4	0.586	0.50	12	Moderate
	TRUE	51	58.6				
7. The Nasogastric tube should not be inserted if the patient has a major injury of	FALSE	6	6.9	0.943	0.28	2	High
	TRUE	81	93.1				
8. Contraindications of Enteral Feeding:	FALSE	25	28.7	0.713	0.46	10	High
	TRUE	62	71.3				
9. The proper patient position during nasogastric intubation is:	FALSE	5	5.7	0.943	0.23	1	High
	TRUE	82	94.3				
10. The Nasogastric is measured from:	FALSE	6	6.9	0.931	0.25	3	High
	TRUE	81	93.1				
11. Number of trials allowed for a nurse to insert the nasogastric tube is:	FALSE	78	89.7	0.103	0.31	15	Weak
	TRUE	9	10.3				
12. One of Safe methods to confirm nasogastric tube placement is:	FALSE	54	62.1	0.414	0.58	13	Moderate
	TRUE	33	37.9				
13. The enteral feeding is preferred to be given:	FALSE	11	12.6	0.874	0.33	6	High
	TRUE	76	87.4				
14. When we start enteral feeding for the first time;	FALSE	60	69	0.310	0.47	14	Weak
	TRUE	27	31				
15. The equipment required to give enteral feeding include	FALSE	17	19.5	0.805	0.40	7	High
	TRUE	70	80.5				
Overall Score	FALSE	25	28.7	0.711	0.12		High
	TRUE	62	71.3				

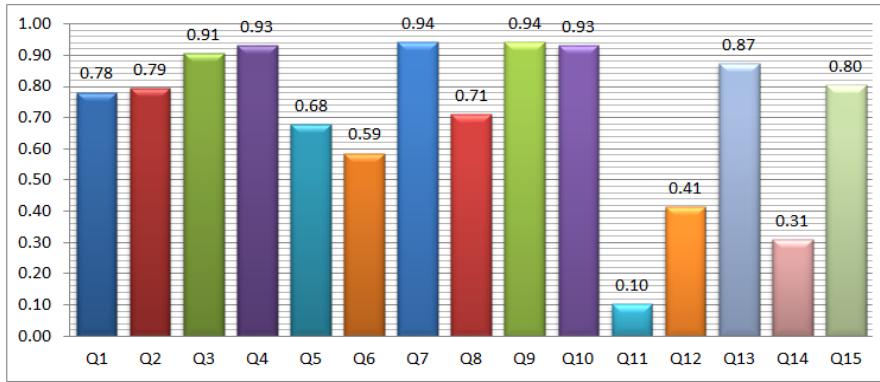


Figure 7: Scores of the nursing awareness about nasogastric tube feeding

RESEARCH QUESTION 2:

Are there differences between levels of nursing knowledge about nasogastric tube feeding due to their demographics?

To test the independence of knowledge about patient safety goals from nurses’ demographics, we use the Kruskal-Wallis and Mann-Whitney.

Table 4: Age: Analysis of variance of nurses’ knowledge about patient safety goals by AGE

AGE	N	M	SD	Kruskal-Wallis	P
20 to 24 years old	6	0.64	0.156	11.821	0.019
25 to 30 years old	46	0.73	0.122		
31 to 35 years old	20	0.75	0.096		
36 to 40 years old	9	0.60	0.120		
41 to 45 years old	6	0.71	0.131		
TOTAL	87	0.71	0.125		

Note: M=Mean, SD=Standard Deviation, P= P-value.

As shown in Table 4, a Kruskal-Wallis revealed that there were significant differences (p = 0.019) in level of nursing knowledge about nasogastric tube feeding based on age. Age appeared to make a significant difference in level of nursing knowledge

about nasogastric tube feeding. However, the Scheffé post hoc test revealed that the mean for cardiac nurses who belong age (36 to 40) (M = 0.60) was significantly lower than the mean age (31 to 35) (M = 0.75).

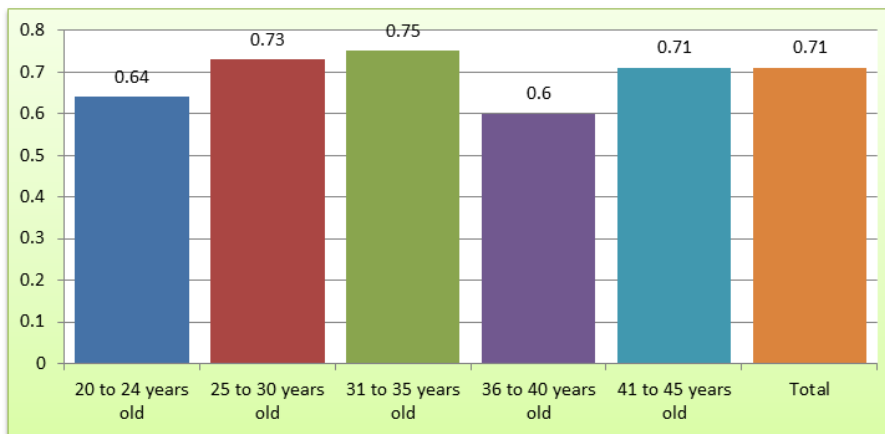


Figure 8: Means of level of nursing knowledge about nasogastric tube feeding according to age

Table 5: Marital Status: Mann-Whitney of level of nursing knowledge about nasogastric tube feeding by MARITAL STATUS

MARITAL STATUS	N	M	SD	MEAN RANK	Mann-Whitney	P
Single	45	0.72	0.111	45.03	898.5	0.676
Married	42	0.70	0.138	42.89		

Note: M=Mean, SD=standard deviation, P=P-value.

The Mann-Whitney revealed that there were no statistically significant differences ($p = 0.676$) in the level of nursing knowledge about nasogastric tube feeding based on marital status: Single ($M = 0.72$),

Married ($M = 0.70$). Marital status did not appear to make a significant difference in level of nursing knowledge about nasogastric tube feeding (see Table 5).

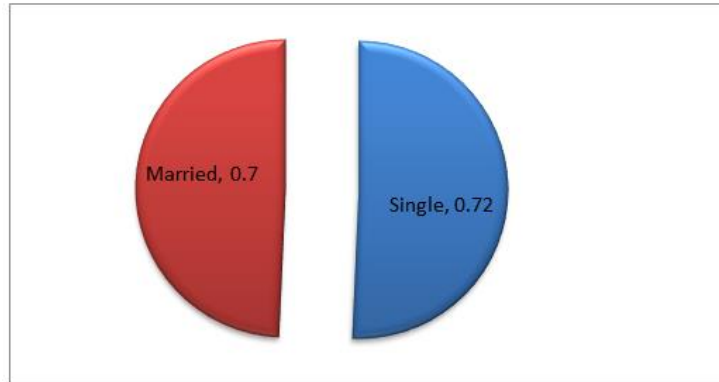


Figure 9: Means of level of nursing knowledge about nasogastric tube feeding according to marital status

Table 6: *Experience*: Analysis of Variance of level of nursing knowledge about nasogastric tube feeding by EXPERIENCE

EXPERIENCE	N	M	SD	Kruskal-Wallis	P
1 to 5 years	50	0.72	0.121	0.388	0.824
6 to 10 years	30	0.70	0.138		
11 years and above	7	0.73	0.102		
TOTAL	87	0.71	0.125		

Note: M=Mean, SD=standard deviation, P=P-value.

As shown in Table 6, a Kruskal Wallis Test revealed that there were non-significant differences ($p = 0.824$) in of level of nursing knowledge about nasogastric tube feeding based on experience.

Experience did not appear to make a significant difference of level of nursing knowledge about nasogastric tube feeding.

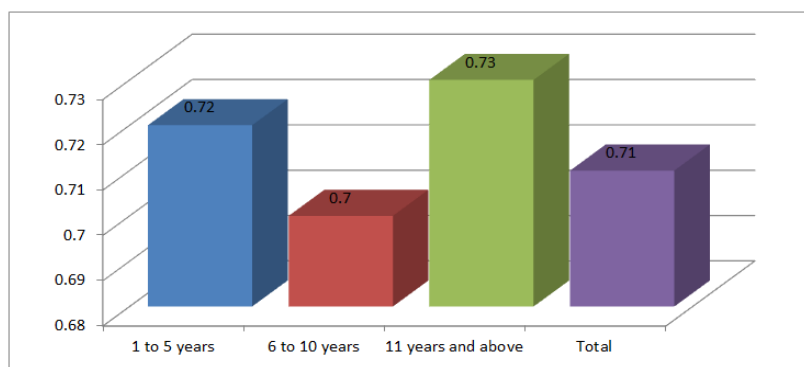


Figure 10: Means of level of nursing knowledge about nasogastric tube feeding according to experience

Table 7: *Educational level*: Analysis of Variance of level of nursing knowledge about nasogastric tube feeding by EDUCATIONAL LEVEL

EDUCATIONAL LEVEL	N	M	SD	Kruskal-Wallis	P
High School or Diploma Nursing	7	0.76	0.127	6.813	0.033
Bachelor of Science in Nursing	72	0.72	0.120		
Post Graduate Nursing Education	8	0.62	0.132		
TOTAL	87	0.71	0.125		

Note: M=Mean, SD=standard deviation, P=P-value.

As shown in Table 7, a Kruskal Wallis Test revealed that there were significant differences ($p =$

0.033) in level of nursing knowledge about nasogastric tube feeding based on educational level. Educational

level appeared to make a significant difference in level of nursing knowledge about nasogastric tube feeding (see Table). Age appeared to make a significant difference in level of nursing knowledge about nasogastric tube feeding. However, the Scheffé post hoc

test revealed that the mean for cardiac nurses who belong (Post Graduate Nursing Education) (M = 0.62) was significantly lower than the mean (High School or Diploma Nursing) (M = 0.76).

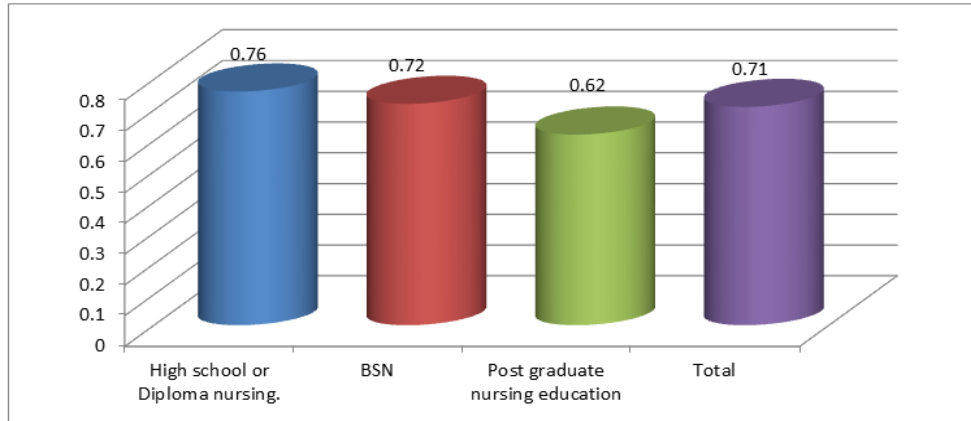


Figure 11: Means of level of nursing knowledge about nasogastric tube feeding according to educational level

Table 8: Working unit: Analysis of variance of level of nursing knowledge about nasogastric tube feeding by WORKING UNIT

WORKING UNIT	N	M	SD	Kruskal-Wallis	P
CCU	26	0.74	0.013	0.884	0.829
CSICU	34	0.69	0.160		
CW	21	0.71	0.144		
Others	6	0.73	0.094		
TOTAL	87	0.71	0.125		

Note: M=Mean, SD=standard deviation, P=P-value.

As shown in Table 8, a Kruskal-Wallis revealed that there were significant differences (p = 0.829) in level of nursing knowledge about nasogastric

tube feeding based on working unit. Working unit didn't appear to make a significant difference in level of nursing knowledge about nasogastric tube feeding.

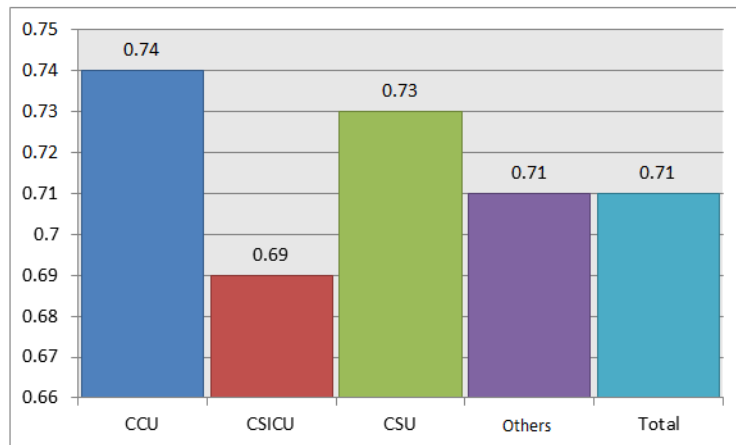


Figure 12: Means of level of nursing knowledge about nasogastric tube feeding according to working unit

Table 9: Previous Educational Program: Mann-Whitney of level of nursing knowledge about nasogastric tube feeding by PREVIOUS EDUCATIONAL PROGRAM

Previous Educational Program	N	M	SD	Mean Rank	Mann-Whitney U	P
Yes	16	0.68	0.156	39.69	499.00	0.423
No	71	0.72	0.117	44.97		

Note: M=Mean, SD=standard deviation, P=P-value.

The Mann-Whitney revealed that there were no statistically significant differences ($p = 0.423$) in the level of nursing knowledge about nasogastric tube feeding based on previous educational program: Yes (M

= 0.68), No (M = 0.72). Previous educational program did not appear to make a significant difference in level of nursing knowledge about nasogastric tube feeding (see Table 9).

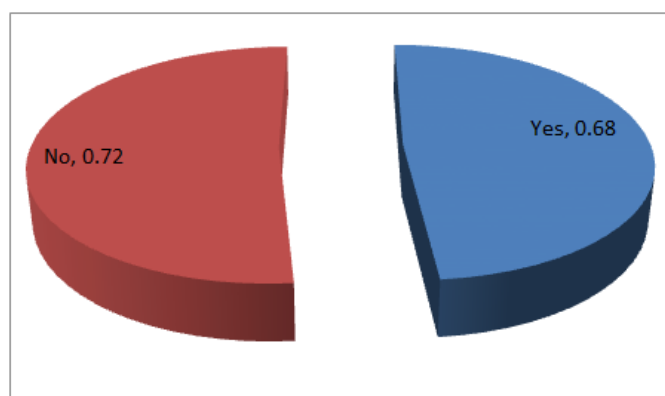


Figure 13: Means of level of nursing knowledge about nasogastric tube feeding according to previous educational program

CONCLUSION

This study implies that nurses play a vital role in patient care, thus, knowledge regarding enteral nutrition is imperative to deliver safe and effective feeding. The nurses' knowledge regarding enteral nutrition at the cardiac nursing units were enough under safe practices. The in-short activities of Continuing Nursing Education had a positive effect in improving the nurses' knowledge and practices regarding enteral nutrition in the in-patients' departments at Cardiac Center Hail

RECOMMENDATIONS

An education program based evidence related to enteral nutrition is of utmost importance for cardiac care nurses due to the shortage of new evidence-based knowledge and practices and the work overload on the nursing staff most of the time. Continuing Nursing Education programs about enteral nutrition can play a part too in supporting clinical practice by placing a strong emphasis on theoretical concepts, skill development and the use of critical appraisal skills. Enhancing collaboration between health care providers and offering appropriate counseling should also be emphasized because the quality and safety in relation to nutritional nursing care is dependent on the interactions between the nurse and patient, between the nurse and the team, and the nurse and the organization.

ACKNOWLEDGEMENT

We thank the Cardiac Center Hail Nursing Administration for coordinating the data collection. Also, we are grateful to all the nursing staffs of Cardiac Center Hail and the Hail Health Cluster Ethical

Committee for the efforts and contribution on this research.

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