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NUTRITIONAL ASSESSMENT OF CRITICALLY ILL PATIENTS IN INTENSIVE CARE UNITS OF ASSIUT UNIVERSITY HOSPITAL, EGYPT

M. Kamal E. Youssef Mohamed*, M. M. Mehany**, M. Abdel Latif***, M. A. Mohamed** and M. K. Ghanem****

***Food Science & Technology Department, Faculty of Agriculture, **Medical-Surgical Department, Faculty of Nursing, ***Anesthesiology and Intensive Care Unit, Faculty of Medicine and ****Chest Department Faculty of Medicine, Assiut University**

ABSTRACT :

Critical ill patients have specific-metabolic response to injury or disease that is characterized by an accelerated metabolic rate, rapid loss of fat and muscle mass. The capacity for recovery from illness depends on nutritional status. Poor nutritional status delays recovery, where as good nutritional status promotes healing and recovery. Nutritional support is an integral part of therapy for critically ill patients each patient has unique nutritional needs depending on his injury or disease. The nutritional care process is often performed during a comprehensive nutritional assessment by the dietitians with nursing personal to determine medical nutritional therapy. The aim of the present study was an attempt to assess the nutritional status of the critically ill patients to identify nutritional problems and plan, deliver proper nutritional therapy. The study was carried out at intensive care units (I.C.U) of Assuit University Hospital namely (general, trauma and chest I.C.U.s). Study subjects were a sample of 150 patients who admitted to (I.C.U.) from both sex and from ages ranging from 15 to 60. Two tools were designed and used to collect necessary data for this study. The first tool which was used to elicit health status of patients included, demographic data, health status of patients, anthropometrics measurements and biochemical blood analysis. The second tool performed the nutritional scoring tool which evaluates the nutritional status of critically ill patients. The main results of this study were male and female patients of trauma and chest I.C.U. recorded medium and good over all scoring system of their nutritional status. Therefore the scoring evaluation of life style of general intensive care patients showed that both male and female patients recorded medium over all scoring system of their nutritional status. The present study recommended that in I.C.U. of Assiut University hospital a comprehensive nutritional assessment of the critically ill patients should be conducted by dietetic professionals, with medical and nursing personnels to determine appropriate medical nutritional therapy taking in consideration identified needs of the patients including anthropometrics, biochemical tests, clinical observations and diet evaluation scoring system.

INTRODUCTION:

Critically ill patients have a specific metabolic response to injury or disease that is characterized by an accelerated metabolic rate, rapid loss of fat and muscle mass and if prolonged, an increase in mortality. Other effects include immunosuppression, decreased

or delayed wound healing, loss of muscle strength. Nutritional support in the early stages of critical illness necessary to lessen these potential adverse effect. The metabolic response to critical illness almost immediate hypermetabolism with resultant loss of lean mass (Trujillo *et al*., 1999)

Hypermetabolism in critically ill patient results from the neuroendocrine response which changes the metabolic rate. Studies indicated that the injury of trauma, surgery, or sepsis induce a systemic neurohumoral mediated response that is reflected the plasma metabolic profile and in the urinary metabolites (Cerra, 1987 and Kostantinides, 1998).

The capacity for recovery from illness depends on nutrition status. Poor nutritional status delays or prevents recovery, where as good nutritional status promotes healing and recovery. It is therefore important to determine the nutritional status of those undergoing medical treatment or cure (Grodner *et al*., 1996)

Nutritional support is an integral part of therapy for critically ill patients. A part that often overlooked and play an important role in patient's outcomes. The characteristic hypermetabolism in critically ill patients makes provision of nutritional support challenging (Trujillo *et al*., 2001).

Who to feed, what to feed, when to feed, and how to feed are questions that continue to evolve especially when patients are critically ill (Trujillo *et al*., 2001).

Each patients has unique nutritional needs depending on his injury or disease. For nutrition intervention to be efficacious and successful, a systematic, logical strategy is necessary. The nutritional care process is often performed during a comprehensive nutritional assessment by the dietitians with nursing personal to determine medical nutritional therapy (Gronder *et al*., 1996).

Although dietitians most often performed nutritional assessment, nurse plays a key role in determining potential nutrient deficiencies (Trujillo,*et al*.,1999).

Nutritional assessment collected data from several different sources to assess patients, nutritional needs, often using the anthropometrics, biochemical test, clinical observation, diet evaluation. Each part of this process is important because there is no one single parameter that directly measures nutritional status or determines nutritional problems or needs (Perry andPolter, 1994).

Nutritional assessment begins with history that reviews previous medical conditions, recent weight loss or gain, dietary habits when patient is critically ill, it is often necessary to elicit this information from the patient or from family members (Veldee, 1994)

Anthropometrics measurements are determined by simple non invasive techniques that measure height, weight, arm muscle circumferences, and skin fold thickness. The effectiveness of single anthropometrics measurements is limited but serial measurements could be useful in assessing body composition changes or growth over a period of time. Standardized techniques must be used to obtain valid and reliable measurements (Grodner *et al*., 1996).

In adults height is needed for assessment of weight and body size. When the patient is comatose, critically ill, or unable to be moved for other reasons, a more accurate measurement for patients who can not stand is knee height (Denke and Wilson, 1998).

Body weight is one of the most important measurements in assessing nutritional status. For patients who cannot be weighted because of the severity of their medical condtion or if bed or chair scales are not available, developed gender specific equations for predicting

body weight (Grodner *et al*., 1996), were recommended.

Because more than half of the total body fat is subcutaneous, measurement of skin fold thickness provides a noninvasive index of body fatness. The skin fold measures are taken by measuring a double fold of skin and fat tissue at specific body sites. Although eight sites (chest, triceps sub scapular, midaxillary, abdomen, thigh and medial calf) can be used the triceps skin fold (TSF)is most commonly used as single site. It is important that the person taking the (TSF) be properly trained and subsequent measurement to be taken by the same person (Grodner *et al*., 1996).

Mid arm muscle circumference provides an indication of skeletal muscle mass and is derived from measurements of the triceps skin fold and mid arm circumference (Grodner *et al*., 1996).

Many of the routine blood and urine laboratory tests found in patients' charts are useful in providing an objective assessment of nutritional status. Care should be taken in interpreting test results for a number of reasons first of all, there is no single available test for evaluating short-term response to medical nutritional therapy. Laboratory tests should be used in conjunction with an anthropometrics data, clinical data, and dietary intake assessment. Second some test may be inappropriate for certain patients for example serum albumin can not be used to evaluate protein status in those patients with liver failure because this test assumes normal liver function third lab. Tests conducted serially will give more accurate information than single test. Therefore test results compared to standards should be used. The most important biochemical parameters are visceral protein status (serum albumin) immune function (total lymphocyte count), transferrin, homoglobin, blood urea nitrogen and creatinine excretion in 24-houre urine. The results of these biochemical assessments provide information to determine the effect of nutritional factor on the health status of the patients (Ithcra Project, 1998 and Konstantinides 1998).

AIM OF STUDY:

The present study was performed in an attempt to assess the nutritional status of the critically ill patients, as well as to identify nutritional problem that adversely affect common health. Beside such study provide possibilities to obtain specific information to help plan and deliver proper nutritional care.

SUBJECT AND METHODS:

Setting: The study was carried out at the following intensive care units (I.C.U) of Assiut University Hospital, namely (General intensive care unit, Trauma intensive care unit and Chest intensive care unit).

Subjects: The study subjects were a sample of 150 patients who admitted to ICU unit (50 from general ICU, 50 from trauma ICU, and 50 from Chest ICU) these patients from both sex and from age 15 years and over (adults patients).

Tools: Two tools were designed and used to collect necessary data for this study.

I-The first tool: to elicit health status:

a-Demographic data: as name, age, and sex.

b-Health status of patients: e.g. diagnosis, past medical history, history of meals before admission and feeding pattern in ICU.

c-Anthropometrics measurements; which include:

1-Height: for patients who can not stand knee height was measured to estimate height using the following formulas;

-Male height (cm) = 64.19 - (0.04 X age) + (2.02 X knee height cm).

-Female height = 84.88-(0.24 X age)+(1.83 X knee height cm).

2-Weight: for elderly patients or who can not be weighted because of the severity of their medical condition. Grodner *et al*., (1996) have developed Gender-specific equations for predicting body weight:

-Female weight = (0.98 X AC in cm)+(1.27 X CC in cm) + (0.4 X SSFS in cm) + (0.87 X KN in cm) - 62.35.

Ac="arm circumferences".

CC = Calf circumferences

SSFS = sub. scapular skin fold thickness.

Kn = knee height

-Male weight = (1.73 X AC "in cm") + (0.98 X CC "in cm") + (0.37 X SSF "in cm") + (1.16 X KN "in cm") - 81.69.

3-Body mass index (BMI)= weight (kg)/height $(m)^2$.

4-Mid arm circumferences (MAC).

5-Skin fold thickness (SFT).

6-Mid arm muscle circumference (MAMC) = MAC(cm)-(0.314 X TSF (mm). Each item was performed weekly until patients discharge.

d-Biochemical assessment:

Laboratory investigation included the following parameters;

1-Serum total protein and serum albumin.

2-Blood picture.

3-Kidney functions tests (urea and creatinine)

4-Serum electrolytes (Na^+, K^+, Ca^+, and Cl^-).

Such laboratory investigations were evaluated weekly until patients discharge from the ICU.

II- Second tool:

Performed the nutritional scoring tool which evaluate the nutritional status of I.C.U. patients was applied as recommended by professor Youssef (2002) which include;-

Scoring evaluation:

1-(10) social status (occupation, education, age, sex).

2-(20) feeding habits (food fads, food habits, food preparation methods, snaks diets, beverages between meals)

3-(40) feeding system (oral feeding, tube feeding, parenteral feeding)

4-(20) feeding response.

5-(10) (others)

Scoring system:

- 100 optimal. - 75 good. - 50 medium

- 25 poor. - 0 very poor.

RESULTS AND DISCUSSION:

It is note-worthy to point that each patient has unique nutritional needs depending on his or her injury or illness. For nutrition intervention to be efficacious and successful, a systematic, logical nutritional regime is necessary. Therefore, the nutritional care process provides such an approach.

In the present study a comprehensive nutritional assessment was conducted to determine appropriate medical nutrition therapy based on the identified needs of the patients. This nutritional care process used the following parameters:

-Demographic data.

-Health status of patients (e.g. diagnosis, past medical history, history of meals before

admission and feeding pattern in intensive care units (I.C.Us).

-Anthropometric measurements (e.g. height, weight, body mass index (BMI), mid arm circumference (MAC), skin fold thickness (SFT) and mid arm muscle circumference (MAMC).

-Biochemical assessment (i.e. serum total protein, serum albumin, blood picture, kidney functions test (urea and creatinine), serum electrolytes (Na^+, K^+, Ca^+ and Cl^-)

-Nutritional status including scoring evaluation and scoring system as recommended by Professor Youssef (2002).

Furthermore, nutritional support is an integral part of therapy for critically ill patients, a part that is often overlooked and yet may play an important role in ICUs patient's outcomes. In the present investigation the four W's (who to feed, what to feed, when to feed and how to feed; i.e. route of administration) were considered for ICU's patients of Assiut university hospital. The answers of these four questions may not always be obvious to critical care nurses or other providers caring for these patients. In this paper, we address these questions and highlight current concepts of providing nutritional support to critically ill patients in the three studied ICU's of Assiut university hospital namely. General, Trauma and Chest Intensive Care Units.

The data of life style of trauma intensive care patients are outlined in Table (1). Since malnutrition increases morbidity and mortality, the goal of nutritional support applying different types of feeding is to prevent or correct nutrition deficiencies to minimize or eliminate the adverse effects of malnourishment. Table (1) showed that oral nutrition followed by tube feeding were the most common recording 29.4%, 56.3% and 35.3%, 25% for male and female patients, respectively. Meanwhile, 11.8% parenteral nutrition was recorded for male patients only. Enteral nutrition is more advantageous than parenteral nutrition because intestinal stimulation from luminal nutrients helps maintain the structure and function of the gastrointestinal muscosa (Trujillo *et al.*, 2001). Likewise, the enteral nutrition is less costly than parenteral nutrition.

In traumatized male patients (Table 1) the administration of parenteral nutritional solutions may improve immune function and decrease hospital stays and costs.

Table (2) represents the mean values of anthropometric measurements of trauma intensive care patients. Anthropometric indices can be used to identify malnutrition of patients and/or to assess the nutritional status of the three studied ICUs patients.

The World Health Organization (WHO)(1995) recommended the use of the united states national center for health (NCHS) reference growth data (2002) as an international standard for comparisons of health and nutritional status. Table (2) revealed a rather marked drop in BMI, MAC, MAMC and SFT in both male and female trauma intensive care patients. However, such drop was more sound in male patients, which reflected both past (Chronic) and/or present (acute) undernutrition (Lee and Nieman, 2003). Therefore, the nutritional assessment is essential to determine which patients have or at risk for malnutrition or deficiencies in specific nutrients (Coats *et al.*, 1993).

Table (3) represents the mean values of blood measurements of trauma intensive care patients. The most widely used index of nutritional status and predictor of outcome is the serum concentration of albumin. This measurement is used to differentiate hypoalbuminemic malnutrition (serum albumin levels<30 g/L). Both male and female trauma intensive care patients had serum albumin levels

below 30 g/L as the hospital staying was prolonged up to the 4th week. Such data are in good agreement with Doweiko and Nompleggi (1991) findings. Alternate causes of abnormally low albumin values may be poor protein intake, trauma severe hepatic insufficiency (Gronder *et al*., 1996).

Table (1): Life style of Trauma intensive care patients. n = 50

Patients' numbers	Age	Hospital staying	Past medical history		Oriented		Bedridden		Methods of feeding			
	M±SD	M±SD	Yes	No	Yes	No	Yes	No	Oral	Tube	Parenteral	Mixed
Male												
34	39.82±18.363	14.47±9.858	7D*	27	13	21	30	4	10	12	4	8
68%			20.6%	79.4%	38.2%	61.8%	88.2%	11.8%	29.4%	35.3%	11.8%	23.5%
Female												
16	27.56±11.59	13.25±7.80	-	16	9	7	13	3	9	4	-	3
32%			-	100%	56.3%	43.7%	81.3	18.7	56.3%	25	-	18.7

***Diabetics**

Table (2): Mean values of anthropometric measurements of Trauma intensive care patients.

Week	No	Height	No	Weight	No	BMI	No	MAC	No	MAMC	No	SFT
Male												
First	34	148.32±7.265	34	48.53±16.70	34	23.76±4.09	34	27.70±3.256	34	25.02±2.823	34	9±7.749
Second	-	-	34	48.14±9.47	26	20.96±3.631	26	25.6±2.88	26	22.85±1.77	28	7.71±5.25
Third	-	-	12	47.16±7.69	11	20.80±3.51	12	26±2.7	12	22.50±2.72	13	7.00±5.2
Forth	-	-	6	40.3±7.408	5	18±2.91	6	23.6±2.2	6	22±2.1	6	3.33±1.88
5th	-	-	4	36±7.670	4	18±2.91	4	20.6±2	4	19.15±3.8	4	3.3±1.88
Female												
First	16	148.375±6.44	16	41.78±6.966	16	18.5±2.031	16	25.187±1.666	16	20.68±1.56	16	12.28±3.28
Second	-	-	16	39.5±8.186	10	16.3±1.951	13	23.23±2.189	11	19.09±4.09	9	8.66±0.47
Third	-	-	-	-	4	14±0	3	22.6±2.8	-	-	2	9±0
Forth	-	-	-	-	4	14±0	3	22.6±2.8	-	-	2	8.5±0.5
5th	-	-	-	-	-	-	-	-	-	-	2	8.5±0.5

Table (3): Mean values of blood measurments of Trauma intensive care patients

Week	No	Blood picture				No	Liver function		No	Kidney function		No	Serum electrolytes			
		RBCs	HG	HCt	WBCs		T-protien	Albumin		Urea	Creatineone		Nat	K^{+}	Ca^{++}	Cl^{-}
Male																
First	34	3.97±0.99	10.76±2.86	33.2±6.37	14.4±5.89	34	57.44±8.87	31.55±5.87	34	6.23±2.70	86.44±28.80	34	130±7.476	4.3±0.77	1.18±97.9	97.9±8.90
Second	20	3.6±0.744	9.8±2.204	31.12±4.80	11.6±3.67	21	56±8.8	30.2±4.084	21	4.43±0.969	63.52±11.60	13	131±6.49	4.29±0.63	0.56±2.8	96.5±5.01
Third	12	3.2±0.390	9.8±2.204	28.5±2.270	14.03±6.90	12	56±8.8	27.66±6.155	14	4.942±3.089	60.28±4.26	6	122±7.118	4.59±1.7	1.57±3.12	84..3±4.02
Forth	6	2.83±0.694	8.02±2.23	24.7±3.737	10.06±0.89	6	60±5.9	26.66±4.49	-	-	-	-	-	-	-	-
5th	4	3.82±0.744	10.5±3.193	29.8±2.290	8.4±0.98	4	53±3.5	26.6±4.49	-	-	-	-	-	-	-	-
Female																
First	16	3.3±0.82	9.0±1.9	26.2±5.03	11.5±5.34	16	58.18±14.59	29.5±7.00	16	3.52±0.829	51.18±9.25	16	135±14.2	4.05+14.2	0.780±0.19	94.93±0.1045
Second	10	3.8 ± 0.73	8.7 ± 2.00	30.1 ± 8.11	9.0 ± 15	10	58.125±13.9	28 ± 5.58	10	2.9 ± 00.834	42.2 ± 9.72	4	129 ± 0	5 ± 0	0.60 ± 0	77 ± 0
Third	2	3.4 ± 0	8.7 ± 2.00	39 ± 7.00	03 ± 22	3	58.37±15.4									
Forth	2	3.4 ± 0	8.7 ± 2.00	34 ± 0	3 ± 20.6	3	58.37±15.4	26.2 ± 4	3	2.8 ± 1.014	48 ± 0	4	136 ± 0	4.9 ± 0	0.60 ± 0	92 ± 0
5th	2	3.4 ± 0	8.7 ± 2.00	30.2 ± 8.11	3 ± 7.5	-	-	-	-	-	-	-	-	-	-	-

On the other hand, the other mean values of blood picture (RBCs, HC, HCT and WBCs), kidney function (urea and creatinine) and serum electrolytes (Na^+, K^+, Ca^{++}, Cl^-) recorded very low values as given in Table (3) for both male and female trauma intensive care patients, except for Na^+ and K^+ values, which were more or less near the normal values.

Such blood measurements are rather useful in providing an objective assessment of nutritional status. But, there is no single available test for evaluating short-term response to medical nutritional therapy. Therefore, the scoring evaluation of life-style of trauma intensive care patients outlined in Table (4) as recommended by professor Youssef (2002) seemed very useful in setting up the overall scoring system for the patients. Table (4) proved that male and female trauma intensive care patients recorded medium and good overall scoring system of their nutritional status.

Table(4): Scoring evaluation of life-style of Trauma intensive care patients. (group1, G1)

Attributes	Max. score	Sex		P-value
		Male	Female	
Social status	10	9.0	10.00	0.473 (n.s)
Feeding habits	20	12.00	12.00	-
Feeding system	40	28.00	36.00	0.271(n.s)
Feeding response	20	16.50	11.75	0.02*
Others	10	2.00	5.20	0.04*
Total score	100	67.50	75.00	0.08(n.s)
Scoring system	-	Medium	Good	-

(n.s) : P>0.05 no significant * : P<0.05 significant

The data of life style of General intensive care patients are presented in Table (5). This table showed that oral nutrition followed by tube feeding were the most common recording 50% and 29.7% in male patients and 26.9% and 61.5% in female patients, respectively. Meanwhile, 3.8% mixed feeding was recorded for female patients only. In case of female patients who received tube feeding they had feeding difficulties and/or medical problems placing them at increased risk. Intermittent tube feedings were administered in equal portions 8 to 10 times per day having the advantage of resembling a more normal pattern of intake and allowing the patients more freedom of movement between feedings. Tolerance of intermittent feeding was optimized by infusion the formula by slow gravity drip over a 30–60-minute period. Generally, no more than 250 ml of formula should be given in a single feeding which agrees with Dudek (1997).

Table (6) represents the mean values of anthropometric measurements of General intensive care patients. The simplest and most practical index of malnutrition is the degree of weight loss. The data given in table (6) recorded a marked drop in weight, BMI, MAC and SFT in both male and female General intensive care patients, which reflected clear undernutrition, weight loss indicated protein-energy malnutrition and was the best predictor of clinical outcome. Such finding agrees with Shronts *et al*., (1988).

Table (7) represents the mean values of blood measurements of General intensive care patients. In both male and female patients the serum concentration of albumin was below 30 g/L from the second week of nutrition which reflects the case of hypo-albuminemic malnutrition.

Table (5): Lifestyle of General intensive care patients. n = 50

Patients numbers	Age	Hospital staying	PMH		Oriented		Bedridden		Types of feeding			
			Yes	No	Yes	No	Yes	No	Oral	Tube	Parenteral	Mixed
Male												
24	53±15.7	13.25±12.66	10	14	17	7	14	10	12	7	5	-
48%		12.66	41.6%	58.4%	70.3%	29.6%	58.4%	41.6%	50%	29.7%	20.3%	-
Female												
26	25.8±12.99	15.4±8.10	3	23	15	11	21	5	7	16	2	1
52%		8.10	11.5	88.5	57.6%	42.4%	80.8%	19.2%	26.9%	61.5	7.6	3.8

Table (6): Mean values anthropometric measurments of General intensive care patients

Week	No	Height	No	Weight	No	BMI	No	MAC	No	MAMC	No	SFT
Male												
First	24	143.8±5.5	24	40.3±12.1	24	19.7±5.2	24	26.3±3.70	24	23.2±2.5	24	9.79±3.87
Second	-	-	20	37.7±9.20	20	18.1±4.5	17	26.5±3.46	17	23.3±2.3	17	9±3.2
Third	-	-	11	36.09±8.9	11	16.5±3.8	5	25.6±0.8	5	23.2±0.6	5	8±1.7
Forth	-	-	7	37.1±2.4	7	16.8±0.9	4	26.±0	4	20.15±3.86	4	7.75±1.78
5th	-	-	7	37.1±2.4	7	16.8±0.9	4	25.5±0.5	4	19.15±3.8	4	7.75±1.78
Female												
First	26	145.8±5.7	26	44.3±9.9	26	20.98±4.94	26	27.19±4.87	26	22.94±3.65	26	14.42±6.02
Second	-	-	20	40.6±10.5	20	18.82±4.94	20	26.1±4.98	20	21.67±3.79	20	13.05±6.72
Third	-	-	11	32.1±10.3	8	15.36±4.97	8	21.8±5.44	8	18.55±4.05	8	10±6.44
Forth	-	-	6	31.0±8.2	5	15.33±3.87	5	20.8±5.5	5	18.2±4.30	5	7.4±5.27
5th	-	-	6	31.0±8.2	5	15.33±3.87	5	20.8±5.5	5	18.2±4.30	5	7.4±5.27
6 th.	-	-	4	27.5±5.5	-	13.5±2.5	-	-	-	-	-	-

Table (7): Mean values of blood measurments of General I.C.U. patients

Week	No	Blood picture					Liver function			Kidney function			Serum electrolytes			
		RBCs	HG	HCt	WBCs	No	T-protien	Albumin	No	Urea	Creatineone	No	Nat	K^{+}	Ca^{++}	Cl^{-}
Male																
First	24	4.01±0.64	10.7±2.1	33.8±5.7	14.18±6.33	24	60.9±7.8	31.6±5.4	24	12.2±8.3	137.4±123.3	21	138.4±123.3	4.1±06	4.7±3.1	99.2±7.90
Second	10	4.09±0.79	10.5±2.4	31.7±3.3	10.38±1.6	19	51.8±9.8	24.7±6.6	7	14.5±13.1	167.6±179.8	10	137.2±6.9	3.6±0.6	4.2±2.4	979±8.90
Third	3	4.4±0.5	9.3±3.1	34.3±0.4	6.56±1.15	8	52.6±8.3	52.6±7.04	4	4.05±1.2	207±226.9	5	132.8±6.6	3.3±0.6	7.08±1.4	96.5±5.01
Female																
First	26	3.8±1.04	10.8±4.9	25.2±6.02	13.8±7.9	26	61.3±10.7	30.44±16.3	26	7.6±4.1	117.8±4.1	26	135.9±10.3	3.7±0.5	3.7±3.5	94.9±0.105
Second	16	3.4±0.83	9.6±2.5	26.3±6.5	18.4±7.3	15	53.6±68	24.1±6.06	11	10.07±12.8	86.6±13.9	10	133±5.03	4.2±0.8	3.1±3.7	77±0
Third	10	3±0.44	8.5±0.9	30.1±3.5	16.2±6.2	3	53.8±7.6	24.7±4.3	4	6.12±3.7	76.5±22.07	7	136.2±6.1	4.3±1.05	4.4±2.6	93±0
Forth	6	3.5±0.28	9.8±1.4	32±2.4	13.3±2.4	-	-	-	3	4.0±0.72	79.3±15.5	4	132.7±5.06	4.5±0.7	1.6±2.04	-
5^{th}	4	4.2±0.3	9.8±0.4	32±2.4	16.5±7.6	-	-	-	-	-	-	-	-	-	-	-

On the other hand, the other mean values of blood picture (RBCs, HG and HCT, except WBCs), kidney function (urea and creatinine) and serum electrolytes (Na^+, K^+, Ca^{++}, Cl^-) recorded very low values as given in Table (7) for both male and female General intensive care patients, except for Na^+ and K^+ values, which were almost near the normal values. However, the WBCs recorded excessively high values in both male and female patients.

Therefore, the scoring evaluation of life style of General intensive care patients outlined in Table (8) showed that both male and female General intensive care patients recorded medium overall scoring system of their nutritional status.

Table (8): Scoring evaluation of life-style of General intensive care patients (group2,G2)

Attributes	Max. score	Sex		P-value
		Male	Female	
Social status	10	7.50	8.50	0.481 (n.s)
Feeding habits	20	12.00	12.00	-
Feeding system	40	20.50	19.50	0.572(n.s)
Feeding response	20	12.35	11.00	0.382(n.s)
Others	10	4.50	4.50	-
Total score	100	56.85	55.50	0.571(n.s)
Scoring system	-	Medium	Medium	-

The data of life style of the chest intensive care patients are presented in Table (9). This table showed that only oral nutrition followed by tube feeding were applied recording 69.29% and 91.7% and 30.80% and 8.3% in male and female patients, respectively. While both parenteral and mixed feeding were nonexistent

Table (10) represents the mean values of anthropometric measurements of Chest intensive care patients. This table revealed that a rather equal marked drop in BMI, MAX, MAMC and SFT in both male and female Chest intensive care patients.

Table (11) represents the mean values of blood measurements of Chest intensive care patients. In both male and female patients the serum concentration of albumin was above 30 g/L., which reflects that the patients had marasimic malnutrition, which coincides with Doweiko & Nompleggi (1991).

On the other hand, the other hand, the other mean values of blood picture (RBCs, HC and HCT, except WBCs), kidney function (urea and creatinine) and serum electrolyles (Ca^{++} and Cl^-) recorded very low values as shown in Table (11) for both male and female chest intensive care patients, except for Na^+ and K^+ values, which were almost equal to the normal values. However, the WBCs recorded rather high values in both male and female patients.

On the basis of the a forementioned data set in Tables (9, 10 & 11), the scoring evaluation of life style of General intensive care patients outlined in table (12) showed that male, and female Chest intensive care patients recorded medium and good overall system of their nutritional status, respectively.

Table (13) and Figure (1) illustrated the correlation between the three studied groups of patients in intensive care units. The data revealed that there was insignificant correlation among the three studied groups of male and female patients in intensive care units concerning the total score. However, both groups of male and female patients recorded significant correlation between Trauma and

General intensive care units and between General and Chest intensive care units as well.

In conclusion critically ill patients undergo a specific response to stress and injury that results in hypormetabolism and hypermetabolism. It is necessary to determine which patients are at risk of malnutrition, because malnutrition is associated with increased morbidity or mortality. Lastly, nutrition support should begin soon after injury. Enteral nourishment is the preferred route of nutrient administration, however parenteral nutrition might have to be used in conjunction with enteral nutrition to provide optimal nourishment until tolerance to enteral nutrition has been established.

Moreover, in intensive care units in the hospitals a comprehensive nutritional assessment should be conducted by dietetic professional also, Medical staff and Nursing staff to determine appropriate medical nutrition therapy based on the identified needs of the patients including anthropometrics, biochemical tests, clinical observations and diet evaluation. A combination of these parameters must be used to interpret the overall nutritional status presented by patients within the context of their personal, social, and economic backgrounds.

Last but not least, whenever possible, the oral or enteral route of nutrition is preferable; however, many patients are unable to receive appropriate calories in this manner and so require intravenous nutrition.

Table (9): Life style of Chest intensive care patients. n = 50

Patients numbers		Age	Hospital staying	Past medical history		Oriented		Bedridden		Methods of Feeding			
No	%	M±SD	M±SD	Yes	No	Yes	No	Yes	No	Oral	Tube	Parentral	Mixed
Male													
26	52	57.5±14.8	5.3±1.97	-	26	21	5	5	21	18	8	-	-
				-	100%	80.8%	19.2%	80.8%	69.2%	30.8%	-	-	-
Female													
24	48	53.9±12.6	4.75±2.2	8 D*	16	22	2	5	19	22	2	-	-
				33.3%	66.7%	91.7%	8.3%	20.3%	79%	91.7%	8.3%	-	-

Table (10): Mean values of anthropometrics measurements of Chest intensive care patients.

No	Height	Weight	BMI	MAC	MC	SFT
Male						
26	148.3±6.231	50.92±13.975	22.192±6.000	26.769±5.308	21.653±5.384	15.846±5.620
Female						
24	145±5.439	47.04±13.195	22.125±6.482	26.666±6.302	21.833±3.387	19.337±6.523

Table (11): Mean value of blood measurements of Chest intensive care patients at first week

No	Blood picture				Liver function		Kidney function		Serum electrolytes			
	RBCs	HG	HCt	WBCs	T-protien	Albumin	Urea	Creatineone	Nat	K^+	Ca^{++}	Cl^-
Male												
26(52%)	4.999±0.96	13.63±1.704	43.4±05.99	11.996±5.98	63.23±6.95	30.2±6.95	8.86±8.62	101.38±40.75	139.0±7.25	4.17±0.64	7.25±3.23	93±4.2
Female												
26(48%)	4.629±0.654	12.11±1.72	38.66±5565	13.48±6.45	65.54±9.133	31.79±4.51	9.925±6.964	124.66±97.60	143.6±4.19	3.8±0.768	7.5±3.23	74±1.8

Table (12): Scoring evaluation of life-style of Chest intensive care patients (group3,G3)

Attributes	Max. score	Sex		P-value
		Male	Female	
Social status	10	7.50	8.00	0.43 (n.s)
Feeding habits	20	12.00	12.00	-
Feeding system	40	22.50	36.00	0.04*
Feeding response	20	15.50	12.60	0.23(n.s)
Others	10	7.15	6.40	0.351(n.s)
Total score	100	64.65	75.00	0.083(n.s)
Scoring system	-	Medium	Good	-

Table (13) : Correlation between 3 groups of patients in intensive care units

Attributes	G1, G2 & G3 #		G1 & G2 # #		G1 & G3		G2 & G3	
	Male	Female	Male	Female	Male	Female	Male	Female
Social status	0.251 n.s	0.314 n.s	0.321 n.s	0.354 n.s	0.321 n.s	0.47 n.s	-	0.461 n.s
Feeding habits	-	-	-	-	-	-	-	-
Feeding system	0.04*	0.01**	0.02*	0.001***	0.08 n.s	-	0.621 n.s	0.001***
Feeding response	0.04*	0.08 n.s	0.01**	0.632	0.537 n.s	0.641 n.s	0.431 n.s	0.591 n.s
Others	0.001***	0.210 n.s	0.001***	0.08 n.s	0.001***	0.273 n.s	0.03*	0.08 n.s
Total	0.0283 n.s	0.421 n.s	0.04*	0.01**	0.741 n.s	-	0.04*	0.02*

 # Anova test

Student T. test

G1 = Trauma intensive care patients.

G2 = General intensive care patients.

G3 = Chest intensive care patients.

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التقييم الغذائى لمرضى الحالات الحرجة فى وحدات الرعاية المركزة بمستشفى جامعة أسيوط

محمد كمال السيد يوسف*، مجدة محمد مهنى**، محمد محمد عبد اللطيف***
، ماجدة أحمد محمد**، مها كامل غانم****

*أستاذ علوم وتكنولوجيا الأغذية – كلية الزراعة – جامعة أسيوط – عضو أكاديمية العلوم الأمريكية

**مدرس التمريض الباطنى والجراحى – كلية التمريض – جامعة أسيوط

***أستاذ التخدير ، ****مدرس الأمراض الصدرية والتدرن – كلية الطب – جامعة أسيوط

من المعروف أن لدى مرضى الحالات الحرجة استجابة خاصة للإصابة بالجروح والأمراض من ناحية التمثيل الغذائى حيث يتميزوا بتزايد سرعة الميتابولزم، والفقد السريع للدهن والكتلة العضلية. وتكون قدرتهم على الشفاء متوقفة على حالتهم الغذائية، ولذلك فإن الحالة الغذائية الفقيرة تؤخر معدلات شفائهم ، بينما تؤدى التغذية الجيدة إلى سرعة التئام الجروح والشفاء.

ويعتبر التدعيم الغذائى جزءاً متكاملاً لعلاج مرضى الحالات الحرجة نظراً لأن كل مريض يتطلب احتياجات غذائية خاصة تبعاً لحالة من حيث الإصابة بالجروح أو الأمراض، مما يجعل عملية الرعاية الغذائية فى وحدات الرعاية المركزة تتطلب تقييماً غذائياً شاملاً يقوم به خبراء التغذية بمعاونة طاقم تمريض متخصص لتحديد التغذية العلاجية للمرضى.

ولقد هدفت الدراسة الحالية إلى عمل تقييم غذائى لمرضى الحالات الحرجة فى وحدات الرعاية المركزة بمستشفى جامعة أسيوط للتعرف على المشاكل التغذوية والتخطيط لتوفير برنامج تغذية علاجية ملائم لهم.

وقد أجريت الدراسة فى وحدات الرعاية المركزة بمستشفى جامعة أسيوط : وحدة الرعاية المركزة العامة، وحدة الرعاية المركزة لمرضى الإصابات، وحدات الرعاية المركزة لمرضى الصدر. وشملت الدراسة ١٥٠ مريض من مرضى الحالات الحرجة فى هذه الوحدات الثلاث من الذكور والإناث ذو أعمار تتراوح ما بين ١٥ إلى ٦٠ سنة.

وتم تصميم البحث بحيث يتضمن جمع المادة العلمية والنتائج لهذه الدراسة الشاملة. وقد تناول التقييم الصحى للمرضى دراسة النتائج الديموجرافية، الحالة الصحية للمرضى، القياسات الجسمية (الأنثروبومترية) ، والتحليل الكيميائى الحيوى للدم كمحور أول للدراسة. أما المحور الثانى للدراسة فقد تناول استنباط طريقة تغذوية جديدة للتقييم الغذائى لمرضى الحالات الحرجة فى وحدات الرعاية المركزة.

وقد استبان من النتائج أن مرضى وحدة الرعاية المركزة للصدمات الاصابات، ووحدة الرعاية المركزة لمرضى الصدر قد سجلوا معدلاً غذائياً عاماً متوسطاً ، جيداً على التوالى بالنسبة للذكور والإناث. بيد أن مرضى الوحدة العامة للرعاية المركزة سجلوا معدلاً غذائياً عاماً متوسطاً.

وقد أوصت الدراسة الحالية أن الأمر يتطلب عمل تقييم غذائى شامل لمرضى الحالات الحرجة بالاستعانة بخبراء التغذية ومعاونة طاقم طبى و تمريضى متخصص لوضع النظم الملائمة للتغذية العلاجية لهؤلاء المرضى بالأخذ فى الاعتبار الاحتياجات الغذائية الفعلية لهم متضمنة القياسات الجسمية (الأنثروبومترية)، والتحليلات الكيميائية الحيوية للدم ، والفحص الإكلينيكى، وتطبيق النظام الجديد المقترح فى هذه الدراسة للتقييم الغذائى لمرضى الحالات الحرجة فى وحدات الرعاية المركزة بالمستشفيات الجامعية.