

Nutrition Checklist: An Easy Way to Ensure Optimum Nutrition in Burns

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ABSTRACT

OBJECTIVES: The primary goal of this study was to assess the knowledge of health care staff in basic nutrition care management of patients with burn injuries to help develop a checklist to ensure optimal nutrition support, prevent infection, and promote wound healing in patients with burn injuries. The secondary goal of the study was to promote education and awareness among health care workers on nutrition and the implementation of nutrition care.

MATERIALS AND METHODS: We enrolled 20 participants, including doctors (n = 3), nurses (n = 10), medical technicians (n = 5), and patient care staff (n = 2). Data were collected by face-to-face interviews using our 2 evaluation forms (demographic details of the participants was form 1 and burns nutrition basic knowledge assessment was form 2).

RESULTS: Mean age of participants was 29.9 years. Female-to-male ratio was 1:0.4. A pretest of form 2 was correctly answered by 93% of participants. Among participants, 70% stated that they had received training on nutrition in burn patients, but only 35% felt moderately confident about their knowledge and only 10% felt very confident in supporting patients in nutrition management. High-education level, receiving burns nutrition training, and seniority in the profession and in the institution were the effective factors for those with confidence in providing proper support. The posttest of form 2, after nutrition intervention education, was answered correctly by 99% of participants.

CONCLUSIONS: Many participants had basic knowledge about burns nutrition, but they were not confident. Health care staff need periodical nutritional education sessions in addition to the basic awareness programs for burn injuries. The introduction of nutrition checklist can help to ensure quality nutrition to patients. The checklist compliance can be improved through education and enforcement.

KEY WORDS: *Education, Health care staff, Nutritional support*

INTRODUCTION

Checklists or protocols are commonly used tools for preventing human errors in complex and high-intensity areas of work. The nutrition checklist is a tool designed to develop an easy way to ensure nutrition delivery among patients with burn injuries and to improve quality of care in low-resource settings, with the ultimate goal of a best burn care outcome.¹ Severe burns lead to a hypermetabolic response that is more dramatic than that identified in any other disease or injury. Metabolic rates may exceed 200% of normal, depending on factors that include total body surface area injured, body mass, age, and time from injury to excision of eschar. A variety of physiologic processes are thought to cause this hypermetabolic response, and the consequences of this complex response can be life threatening. Loss of lean body mass, decreased immune response, and delayed wound healing are all major manifestations associated with the hypermetabolic response that can affect the hospital length of stay, morbidity, and mortality. Studies have also demonstrated that hospital length of stay and morbidity rates increase when adequate nutritional support is not adequately provided. Appropriate and adequate nutrition plays a role in attenuation of metabolic responses when there is a timely intervention.

Nutrition support in critically ill patients has been shown to help maintain intestinal barrier function, prevent bacterial translocation, and conserve bowel mucosal integrity,

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further showing that timely provision of nutrition support is a vital component of burn care.² For this reason, workers associated with burns management should receive correct information and basic training on nutrition after burn injuries since improper practices can have detrimental consequences. Poor quality of information may contribute to a lack of understanding of nutrition management. Effective nutrition interventions must be safe, effective, and timely. For this reason, our primary aim was to identify and assess the level of knowledge and awareness on nutrition for patients with burn injuries among health care workers.^{3,4} We then hypothesized a 3-phase nutrition checklist designed to improve team communication and consistency of care that would reduce nutrition-related complications.

MATERIALS AND METHODS

The study was conducted at the burns unit of Choithram Hospital and Research Centre, Indore, India, from June 1 to June 30, 2023. The cross-sectional descriptive study was conducted to identify and assess the level of knowledge and awareness of nutrition management for patients with burn injuries among health care workers. All burn unit staff at the center were asked to respond to a questionnaire related to nutrition care. The structured questionnaire included questions that were based on relevant research studies on the best nutrition support for burns in a simpler form.

All participants were educated on nutritional interventions for patients with burns, and a posttest of the questionnaire was conducted after the education session.

Population and sample of the research

The included population consisted of doctors, nurses, technicians, and care support personnel working in burn-related fields (adult and pediatric burns unit, pediatric intensive care unit) of our hospital. All participants were informed about the criteria of the study, and those who did not want to participate or failed to complete the questionnaire were excluded from the study. The target sample size was calculated as 20.

Burns nutrition knowledge assessment

After a comprehensive review of the literature,^{5,6} our data collection forms was divided into 2 sections: (1) demographic data and information about burns nutrition among participants (2) the evaluation form on “basic burns nutrition knowledge levels of health care professionals.”

Form 1: Participants demographic data and information about burns nutrition. The form had 16 questions, including age, sex, educational qualification, occupation, professional and institutional experience, previous nutrition training related to burns, and the place where the training was received.

Form 2: Evaluation form of basic burn nutrition knowledge levels of health care professionals. This form consisted of 16 items containing correct and incorrect statements. Knowledge was answered as yes, no, and don't know according to 3-level rating.

Checklist

After participants completed the pretest and posttest, we introduced a nutritional checklist to the participants to assure quality nutrition to the burns patients.^{1,7}

The nutritional checklist had 3 phases. On admission, the patient would be sent for dressing or for initial management. Thus, in the first phase, nurses are advised to ask the patient or attender initial assessment questions like history of any known food allergies, history of weight loss for past 3 months, or loss of appetite. Patients should also be questioned on any gastrointestinal intolerances like nausea, vomiting, diarrhea, constipation, or mouth sores. Nurses should check and record whether the patient is able to mobilize.

In the second phase after dressing, if the patient is able to mobilize, the weight and height of the patient should be checked and recorded in the file. This can be performed with or without the presence of dietitian.

The third phase comprises the detailed nutrition intervention and provision, which should be performed by dietitian. This intervention ensures that the 24-hour home recall, initial screening of burn patients with NRS-2002, and initial assessment using “ABCD method” are performed. The dietitian should also mention whether they have given the patient a diet plan and counseling.

Application of research

The implementation of the study started after we obtained permission from the local ethics committee. Questionnaires were distributed to the participants, and they were asked to answer during a convenient time. The forms were collected within 1 week.

RESULTS

Female-to-male ratio among participants was 1:0.4 (70% female), 70% were in the 20- to 29-year age group, 85% had a bachelor's degree or higher, 25% were medical technicians, and 40% had <2 years of experience in practice. In addition, most participants were single (75%) and had no children (80%) (Table 1).

Among participants, 5% stated that their family member had a previous history of burn injury. Among all participants, 70% had already received training on burns nutrition (50% were trained in college), with 35% who felt moderately confident about their knowledge. However,

only 10% were very confident in supporting patients in nutrition management. Most participants (95%) stated that they would prefer to receive future nutrition training on burns (Table 2).

Among participants who had previous nutrition training, 100% were nurses and 47% graduated from university or had a higher academic degree (Table 3 and Table 4). Participants were pretested on knowledge in the initial stage of the study. Among participants, 93% correctly answered questions on form 2 during the pretest (Table 5).

Seniority in the profession and in the institution increased self confidence among participants in providing nutrition support. Participants who had received nutrition training were more confident (Table 6). After the initial screening and pretest, a face-to-face nutritional intervention interaction section was done, and 5 points were discussed with each participant regarding basic nutritional care in burns. After the education session, participants had a posttest on the same form to assess the improvement in knowledge level. (Table 7).

TABLE 1. Distribution of Health Care Professionals by Sociodemographic Characteristics (N = 20)

Sociodemographic Characteristic	No. (%)
Sex	
Female	14 (70%)
Male	6 (30%)
Age group, years	
20-29	14 (70%)
30-39	3 (15%)
40-49	1 (5%)
≥50	2 (10%)
Educational status	
Primary/secondary school	1 (5%)
High school/higher secondary school	2 (10%)
University and higher	17 (85%)
Job	
Doctor	3 (15%)
Nurse	10 (50%)
Medical technician	5 (25%)
Technician + patient care staff	2 (10%)
Years of experience in the job	
0-2	8 (40%)
3-5	5 (25%)
6-10	2 (10%)
≥11	5 (25%)
Marital status	
Married	5 (25%)
Single	15 (75%)
Have children	
0	16 (80%)
1-2	2 (10%)
3-4	2 (10%)
≥5	0

TABLE 2. Information on Burn Experiences of Health Care Professionals (N = 20)

Burn Nutrition Experience of Health Care Professionals	No. (%)
Previous burn injuries to the participant or family member?	
Yes	1 (5%)
No	19 (95%)
Have received nutrition training for burns	
Yes	14 (70%)
No	6 (30%)
Received nutrition training for burns in the last	
0-5 years	8 (57%)
6-10 years	6 (43%)
11-15 years	0
≥16 years	0
Received nutrition training from	
School/college	7 (50%)
Peers/colleagues/family	3 (21.4%)
Books/magazines	0
Workshop/seminar	1 (7%)
Internet/TV	3 (21.4%)
Self-confidence level in knowledge in basic burns nutrition	
Never trust yourself	4 (20%)
A little confident	7 (35%)
Moderately confident	5 (25%)
Self-confident	2 (10%)
Very confident	2 (10%)
Requesting burns-related nutrition training	
Yes	19 (95%)
No	1 (5%)

TABLE 3. Occupation of Health Care Professionals and Nutrition-Related Training to Burns

Received Nutrition Training for Burns	Occupation, No. (%)				P
	Doctor	Nurses	Medical Technician	Technician/Patient Care Staff	
Yes	3 (100%)	5 (50%)	0	0	.022
No	0	5 (50%)	5 (100%)	2 (100%)	

At posttest, after nutrition intervention education, 99% correctly answered form 2 (Table 8). In the final session nutrition checklist was explained to the participants (Figure 1).

DISCUSSION

Provision of nutrition support is an essential component in care of patients with burn injuries. Adequate assessment and management can reduce mortality and complications, optimize wound healing, and minimize the deleterious effects of the exaggerated hypermetabolic response. Hence, all health care workers should be aware of the basic nutrition principles to follow in trauma care of patients with burn injuries.

We found that 70% of the health care staff working with burns management who were included in our study had received training for burns nutrition. A pretest of form 2 was answered correctly by 93% of the participants; the posttest of form 2 was answered correctly by 99% of the participants. Most participants had basic awareness of burns nutrition. However, insufficient knowledge among health care workers and other occupational groups was identified. Factors such as a high level of education, receiving previous training on burns nutrition, and long experience in the profession and in the institution seemed to affect the knowledge level.

TABLE 4. Education Levels of Health Care Professionals and Nutrition-Related Training to Burns

	Educational Status, No.%			P
	Primary or Secondary School	Higher Secondary or Diploma	University and Higher	
Have received nutrition training for burns				.0384
Yes	0	0	8 (47%)	not significant)
No	1 (100%)	2 (100%)	9 (53%)	

TABLE 5. Form 2: Basic Nutrition Knowledge Levels of Health Care Professionals, Pretest Results

Questions	Answer		
	Yes	No	Don't Know
1 Nutrition is important for burns patients.	20 (100%)*	0	0
2 Does nutrition help in recovery and wound healing?	20 (100%)*	0	0
3 Burn patients should be fed as soon as possible.	10 (50%)*	7 (35%)	3 (15%)
4 Checking weight at the time of admission is important.	20 (100%)*	0	0
5 Would you prefer feeding your patient as per their burn size and weight?	8 (40%)*	6 (30%)	6 (30%)
6 Would you consider feeding patient orally than through enteral feeding with a viable gut?	15 (75%)*	4 (20%)	1 (5%)
7 While feeding patients with burns, their choices, likes, dislikes should be considered.	19 (95%)*	1 (5%)	0
8 Protein plays an important role in wound healing and has been associated with improved mortality and morbidity.	20 (100%)*	0	0
9 Adequate amount of liquids should be encouraged in patients with burn injuries.	20 (100%)*	0	0
10 Will you stop feeding your patient, if they have complaints of loose stools?	8 (40%)	11 (55%)*	1 (5%)
11 Is it necessary to check weight of burns patients weekly?	19 (95%)*	1 (5%)	0
12 Wound healing is related to good nutrition.	20 (100%)*	0	0
13 Diet counseling to patients and attender is important.	20 (100%)*	0	0
14 Burns patients need to eat adequate amount of fruits and vegetables, which help in the healing process.	19 (95%)*	1 (5%)	0
15 Good nutrition can reduce the loss of muscle mass.	16 (80%)*	3 (15%)	1 (5%)
16 Weight loss after burns should be taken care of.	20 (100%)*	0	0

*Expected correct choice of the question.

Table 6. Effect of Getting Nutrition Training on Your Improvement in Supporting Nutrition Management

Job	Perceived Level of Proficiency in Providing Nutrition Care, No.(%)					
	Never trust oneself	A little confident	Moderately confident	Self-confident	Very confident	P
Doctor (n = 3)	0	0	1 (33%)	1 (33%)	1 (33%)	.1324 (not significant)
Nurse (n = 10)	0	2 (20%)	3 (30%)	4 (40%)	1 (10%)	
Medical technician (n = 5)	1 (20%)	1 (20%)	3 (60%)	0	0	
Technician and patient care staff (n = 2)	1 (50%)	1 (50%)	0	0	0	

TABLE 7. Nutritional Intervention Chart

Points Discussed	
1	Checking weight at the time of admission is important.
2	Feeding patient orally or through enteral route. Which one is the best and why?
3	Protein and adequate hydration play important roles in wound healing.
4	Checking weight and reassessment weekly is necessary for burns patients and is related to good nutrition.
5	Weight loss after burns needs to be taken care of.

Table 8. Form 2: Basic Nutrition Knowledge Levels of Health Care Professionals, Posttest Results

Question	Answer		
	Yes	No	Don't Know
1 Nutrition is important for burns patients.	20 (100%)*	0	0
2 Does nutrition help in recovery and wound healing?	20 (100%)*	0	0
3 Burn patients should be fed as soon as possible.	19 (95%)*	0	1 (5%)
4 Checking weight at the time of admission is important.	20 (100%)*	0	0
5 Would you prefer feeding your patient as per their burn size and weight?	19 (95%)*	0	1 (5%)
6 Would you consider feeding patient orally than through nasogastric tube?	20 (100%)*	0	0
7 While feeding patients with burns, their choices, likes, dislikes should be considered.	20 (100%)*	0	0
8 Protein plays an important role in wound healing and has been associated with improved mortality & morbidity.	20 (100%)*	0	0
9 Adequate amount of liquids should be encouraged in patients with burn injuries.	20 (100%)*	0	0
10 Will you stop feeding your patient if they have loose stools?	20 (100%)*	0	0
11 Is it necessary to check weight of burns patients weekly?	19 (95%)*	1 (5%)	0
12 Wound healing is related to good nutrition.	20 (100%)*	0	0
13 Diet counseling to patients and attender is important.	20 (100%)*	0	0
14 Burns patients need to eat adequate amount of fruits and vegetables, which help in the healing process.	20 (100%)*	0	0
15 Good nutrition can reduce the loss of muscle mass.	20(100%)*	0	0
16 Weight loss after burns should be taken care of.	20 (100%)*	0	0

*Expected correct choice of the question.

FIGURE 1. Nutrition Checklist

NUTRITION CHECKLIST FOR BURNS PATIENTS					
Patient Name		D.O.A			
Registration NO		Age/ Gender			
IPD NO		Diagnosis			
Sl.no		YES	NO	NA	COMMENTS
PHASE 1 (to be filled by nurse) - <i>Before or during the primary care</i>					
1	Checked with patient for any known food allergy?				
2	History of weight loss within past 3 months				
3	Checked with patient for any history of loss of appetite?				
4	Checked for any GI symptoms like nausea, vomiting, diarrhea, constipation, mouth sore?				
5	Checked for any difficulty with ambulation?				
PHASE 2 (to be filled by nurse/ technician, ideally with dietitian present, but not essential)					
1	Height checked				
2	Weight checked				
PHASE 3 (to be filled by dietitian)					
1	Performed the 24-hour home recall of the patient?				
2	MUAC performed (if the patient is unable to mobilize)				
3	Initial screening with NRS 2002 performed?				
4	Initial assessment using ABCD method done?				
5	Diet plan and counselling to the patient has been given.				

The introduction of a checklist can ensure quality nutrition to patients. The checklist compliance can be improved through education and enforcement.

One of the limitation of our study was that the data were obtained from a single institution and from 20 participants. The implementation of nutrition checklist in burns

requires time, and we could not assess its effectiveness during the present study.

CONCLUSIONS

Most of our participants had basic knowledge about burns nutrition. However, nutrition intervention education

improved the knowledge level, as shown by posttest results. Health care workers need specific and repeated training and basic awareness programs on burns nutrition so that the nutrition checklist can be effectively implemented in burns management. Large-scale studies are needed to assess the credibility of the checklist.

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