Journal of Advances in Medicine and Medical Research

23(11): 1-13, 2017; Article no.JAMMR.35892
ISSN: 2456-8899
(Past name: British Journal of Medicine and Medical Research, Past ISSN: 2231-0614, NLM ID: 101570965)

Weight Change during Hospitalization: Recognition of Risk Factors. Prospective Study at Benghazi Medical Center

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Authors' contributions

This work was carried out in collaboration between all authors. Author MO designed and supervised the study, wrote the protocol, managed the literature search and wrote the first draft of the manuscript. Author FN managed the analyses of the study, data reporting and tabulation and literature search. Authors FN, MY and AE participated in the critical revision of the article. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMMR/2017/35892
Editor(s):
(1) Oswaldo de Vasconcellos Vilella, Department of Orthodontics, Fluminense Federal University, Brazil.
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(4) Piero Valentini, Catholic University of the Sacred Heart, Italy.
Complete Peer review History: http://www.sciencedomain.org/review-history/21070

Original Research Article

Received 1st August 2017
Accepted 13th September 2017
Published 20th September 2017

ABSTRACT

Under nutrition and weight loss associated with prolonged hospitalization is a cause of significant morbidity and mortality. It is also associated with impaired recovery from illness, surgery, and increased hospital length of stay. Despite the growing awareness of the hazards of both over- and under nutrition, nutritional care is often neglected in clinical practice, and nutritional concerns are overlooked or considered of low importance.

The aim of this research was to assess changes in weight status during the course of hospitalization, evaluate nutrition risk factors in Benghazi Medical Center and evaluate the factors independently associated with weight change. A total of 30 patients in total were enrolled, (11 females, and 19 males). Anthropometric measurements were taken by professionally trained researchers. End points were preadmission and post admission. BMI, mid- arm circumference,

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laboratory investigations were all collected from patients. Interview based questionnaire was used to collect data on nutritional risk factors and patient files were checked for documentation and nutritional referrals. A statistically significant differences was found between preadmission and post-admission BMI and mid arm circumference. The mean of weight loss among patients was (1.076 kg), and mean arm circumference loss was 6.69 cm. Patients charts lacked information on poor appetite, dentures, teeth or swallowing problems, information on food provided. No referrals to dietitians were found in all patient files or in discharge summary. Only one patient reported been visited by a dietitian but was not documented in file.

Female gender, admission to surgical ward and being single as a marital status were associated with losing more weight. Physiological and food related problems correlated with the nutritional status of the subjects. The study finding reveals that despite patient undergoing anthropometric changes during hospital stay, there were no information of nutritional status in patient files, very little, if any, nutritional intervention, little documentation of risk factors, and nutritional consultation was almost lacking.

Keywords: Malnutrition; weight loss; hospital; nutritional status; recognition; admission; BMI; Mid arm circumference.

1. INTRODUCTION

Impairment of nutritional status is common among hospitalized patients [1]. Hospitalization can execute a cycle of nutritional deterioration in admitted patients [2]. Hospital under nutrition is a state of nutrition in which the occurrence of nutrient deficiency, energy, protein or other nutrient imbalance results in measurable adverse consequences on tissue/body form (body shape, composition size) and body function as well as clinical outcome [2]. Studies report varying statistics for the prevalence of under nutrition and risk of malnutrition in hospitals, depending on the diagnostic measures; recent figures identified 19-60% of hospitalized patients at risk of malnutrition [3,4]. In-patients with poor nutrition have shown lengthier hospital stay, longer periods of illness, increased risk of developing complications, and increased future readmissions and mortality rates [5-9]. Hospital under-nutrition and weight loss are significantly associated with morbidity and mortality [2,10-12]. Mortality in hospital was shown to significantly increase in those with greater nutritional risk, [2,6-15] even following discharge [12]. It is also associated with impaired recovery from illness or surgery, [2,10,11] and increased hospital stay, [14] resulting in increased hospitalization costs as well as decreased quality of life for patients [2,10,11]. Patients who become undernourished often lack micronutrients, energy, and protein, accelerating the deterioration of their nutritional and health status [2]. The need for increased awareness and treatment of malnutrition in hospitals is crucial [2]. Nutritional care is often neglected in clinical practice, despite the growing awareness of the hazards of both over- and under nutrition during the past two decades [16] nutritional concerns are overlooked or considered of low importance despite advances in medical care [17]. In order to improve the nutrition care process, and to effectively allocate resources where they will be most beneficial to the patients and their recovery, it is essential to identify factors strongly associated with nutritional outcome and assess awareness of nutritional risks at hospitals.

The objective of this research was to assess change in weight and nutrition status during the course of hospitalization, evaluate nutrition risk recognition in Benghazi Medical Centers and evaluate factors associated with weight change throughout the course of hospitalization, specifically for patients admitted to surgical and medical wards who have potentially high risk for weight loss [18]. The results of the current study hope to reveal various factors associated with weight change throughout hospitalization, provide a basis for future research, and have the potential to guide future nutrition care protocols.

2. MATERIALS AND METHODS

2.1 Study Design

This is a prospective cohort study conducted from 25th may to 18 June, 2014 on adult patients admitted directly to the surgical and medical wards at Benghazi Medical Centre. Benghazi Medial Center is a state-owned hospital and is the largest in eastern part of Libya. Study's main objective was to evaluate the changes in patients' nutritional status as estimated by BMI and mid-arm circumference, along with the

evaluation of awareness of nutrition risk factors through documentation in patient files (post admission and on discharge) compared to interview based questionnaire.

2.2 Inclusion and Exclusion Criteria

All patients admitted to the general medicine and surgical wards during the study period were approached. Patients were included if they were conscious and > 18 years old. One-day surgery/admission were excluded. Patients not operated on within 48 hours of admission were also excluded in order to prevent hospital malnutrition confounding results. Data sets were excluded if any pre-op parameter investigated was not recorded. They were also excluded if post-op parameters were not recorded. Three patients were excluded from selection due to their specific admission status (shooting injuries during civil war). A total of 30 patients in total were enrolled, (11 females, and 19 males).

2.3 Data Collection

All patients, were required to answer an interview-based questionnaire and were subjected to anthropometric assessment and reviewing of case notes. The interview-based questionnaire was divided into two subsections; the first section covered various characteristics on preliminary information as gender, age and cause of admission. The second section of the questionnaire was dedicated for obtaining information about anthropometries, biochemical indices, both on admission and before discharge, along with questions on the types of diet followed, being followed by dietitian, and the presence of specific malnutrition risk factors.

2.4 Anthropometry and Assessment of Nutritional Status

At admission, patients' nutritional status was assessed using weight and height to calculate BMI, and mid-arm circumference. Anthropometries were measured following standardized methods [19]. Weight was taken using the Centre's electronic scale, along with a measuring tape for height and mid-arm circumference. Standard measuring techniques were used for anthropometric measurements. BMI (kg/m2) was calculated from weight (measured with Seca 952 chair scale; Weigh and Measure, LLC, Olney, MD, USA) and height (standing height [cm], or if > 65 years or unable to stand, estimated from knee height [SHORR knee height caliper; Weigh and Measure, LLC]) and used in further analysis as categories according to recognized cutoff points. Mid-arm circumference was measured taking the circumference of the upper arm with a non-stretchable tape measure while the person standing upright and arms hanging down loosely. The measuring point is half way between the olecranon process of the ulna and the acromion process of the scapula [19]. Patient's nutritional status was defined using BMI (BMI = weight (kg) / height (m) ²) WHO [20]. For adults 20 years or older, under weight was defined as BMI less than 18.5Kg/m^2, healthy weight as BMI 18.5-24.9Kg/m^2, overweight as BMI 25- 29.9Kg/m^2, obesity as BMI 30Kg/m2 and above [19]. Case notes were reviewed for any information relating to nutritional status or risk factors, and for presence of dietetic referrals. A checklist of expected references to nutrition was used for data collection, and any other nutritional information was also noted. This information aimed to reveal the attitudes of medical staff to nutrition and whether nutritional intervention may have been indicated.

2.5 Ethical Considerations

The University Ethics Committee and the Centre's administration approved the study. Informed consent was obtained from the subjects who were also assured of the confidentiality of the information collected. Prior to the start of the project the respective hospital administrations were informed in writing about the aim of the study to obtain the maximum possible.

2.6 Statistical Analysis

All statistical analyses were performed using SPSS software and significance was $p<0.05$. Age and anthropometric variables were described by their respective mean, standard deviation, and range value.

3. RESULTS

Tables 1 and 2 shows characteristics of the total studied sample of 30 patients admitted to general medicine wards and surgical wards in Benghazi Medical Centre (66.56 % males; 33.3 % female). Mean age was 41.4 years with 40% of patients belonging to 41-50 years old age groups.Patients were hospitalised for various conditions, which fell mainly into three categories; surgery, accidents and chronic diseases (53.3%, 23.3%, and 23.3% respectively). Regarding

socioeconomic characteristics 30% of the subjects were single; 29.6 were unemployed and 33.3% of the subjects received an income of less than 500 Libyan dinars.

Table 1. Subjects characteristics

Characteristics	Number	Percentage %
Male	20	66.65
Female	10	33.3
Cause of admission		
Accident	7	23.3
Surgery	16	53.3
Chronic disease	7	23.3
Marriage status		
Married	21	70
Single	9	30
Economic status		
Work		
Employment	21	71.4
Unemployment	9	29.60
Income		
>700	9	39
500-700	11	36.6
>500	10	33.3

Table 2. Age and gender distribution of subjects

Age (Years)		Sex		Total
		Male	Female	
30-40	No.	5	3	8
	%	16.7	10	26.7
41-50	No.	9	3	12
	%	30	10	40
51-60	No.	3	2	5
	%	10	6.7	16.7
61 and	No.	3	2	5
above	%	10	6.7	16.6
Total	No.	20	10	30
	%	66.65	33.35	100.00
Age (Years) Mean ± SD		41.4 ± 2.8	41± 1	41.4

3.1 Admission and Discharge Anthropometries

Upon admission, mean weight of the patients was (75.3 kg) for male and (73.6 kg) for female. Mean height was (172 cm, 161cm) for men and women respectively. Mean mid- arm circumference on admission was 32.937 cm. (36.7%) of patients were classified as normal weight, none was underweight, (43.3%) was obese (13.3% class I and 6.7 % II obesity), as shown in Table 3.

On the other hand, upon discharge; following a mean (4.4) days hospital stay, (40%) of patients were classified as normal weight, while none were underweight, (40%) were as obese (13.3% class I and 6.7 % class II obesity) mean weight of the patients was (73.907 kg) indicating (1.076 kg) weight loss, mean arm circumference was 26.241 on discharge indicating a mean loss of 6.69 cm as shown in Table 4.

Table 3. Distribution of the subjects according to BMI and MAC on admission

BMI classification	Number	Percent
Normal weight	11	36.7
Overweigh	13	43.3
Obese class 1	4	13.3
Obese class 2	2	6.7
Total	30	100.0
Mean 74.983± 0.251 kg		
Mean MAC 32.937 cm		

Table 4. Distribution of the subjects according to BMI and MAC on discharge

BMI classification	Number	Percent
Normal weight	12	40.0
Over weight	12	40.0
Obese class1	4	13.3
Obese class2	2	6.7
Total	30	100.0
Mean 73.907± 0.311 kg		
Mean MAC 26.241cm		

3.2 Risk factors, Case Reviews, and Referral for Nutritional Support

During interviews; 80% of patients reported having bad appetite, 10% had difficulty chewing, or problems with tasting or swallowing, 10% described their diet as bad and admitted poor diet compliance, while 6.7% had reported not eating from hospital meals, as shown in Table 5. In patients' files, no documentation of poor appetite, problems with dentures, information on food and eating problems, neither did the files document patient poor compliance. 23.3% of patients were documented as having malabsorption, 3.3% were flagged as having increased nutrient requirements, 26.7% as having diarrhea, 6.7% vomiting Table 6.

Table 5. Distribution of sample according to Physiological food problem depending on interview-based questionnaire

Physiological food problem	Frequency	Percent
Appetite loss		
Yes	24	80.0
No	6	20.0
Difficult chewing or swelling tasting		
Yes	3	10
No	27	90
Poor diet		
Yes	3	10
No	27	90
Do not from hospital		
Yes	2	6.7
No	28	93.3

Table 6. Distribution of sample according to Physiological food problem depending on documentation in case notes

Physiological food problem	frequency	percent
Loss of appetite		
Yes	-*	-
No	-	-
Difficult chewing, swallowing or tasting		
Yes	-	-
No	-	-
Mal-absorption		
Yes	7	23.3
No	23	96.7
Increase requirement for nutrients		
Yes	1	3.3
No	29	96.7
Poor diet		
Yes	-	-
No	-	-
Diarrhea		
Yes	8	26.7
No	22	73.3
Vomiting		
Yes	2	6.7
No	28	93.3
Don't eat from hospital		
Yes	-	-
No	-	-

**- not available*

No referral to dietitians was found in all patient files and discharge sheet. Only one patient reported been visited by a dietitian but nonetheless this was not documented in file. No notes were found on patient regarding their nutritional status, weight, nor height measurements.

3.3 Statistical Tests

Mean weight was significantly different between admission and discharge at p=<0.05. Mean mid arm circumference was also significantly different between admission and discharge at p= <0.05. Female gender, surgical ward patients and single patients were associated with losing more weight during hospital staying. (Table 7) With regard to gender as a factor, 19 subjects underwent weight change, all females underwent weight change, while 11 males compared to 9 did not undergo weight status change. 9 out of 16 subjects who were admitted because of surgery underwent weight change, none of those admitted because of their chronic diseases had weight status change, while 5 of the total 7 patients admitted to hospital after accident had weight change According to marital status; all single status patient underwent weight change, while only about third of married patients had any weight change.

Self perceived physiological and food related problems and those documented in file correlated with the nutritional status of the subjects, (Tables 8). No statistical comparison could be carried on referral to dietitian because of lack of referrals and/or documentation. According to loss of appetite 16 patients out of 18 who had weight status change had bad appetite. According to eating from hospital all patients undergoing weight change have been eating from hospital meals. According to chewing and swelling difficulty only 2 patients with the regarded problems had weight change, while 12 without these problems had weight change.

According to mal-absorption and vomiting all patient with these problems had weight change, and half of those without malabsorption and (64.%) of those without vomiting had change in their weight status. Similar to this is what has been observed with regard to diareaha, 6 out of 8 patients with diareaha had weight status change, almost double of those without diareah did not had weight status change.

All patients with poor diet compliance underweight weight change, while 68 % of those with good diet compliance underwent weight change. According to vomiting all those with vomiting underwent weight change. With regard to gender differences, female gender was correlated with poor diet, Diarrhea, Vomiting and Don't eat from hospital more than male gender which may justify the higher weight loss than male (Table 9).

Table 7. Subject's characteristics and BMI status change

Physiological food problem	Percentage of subjects				Total	
	"underwent Change in BMI"		"No Change in BMI"			
	NO.	%	NO.	%	NO.	%
Gender						
Male	9	30	11	36.7	20	66.56
Female	10	33.3	0	0	10	33.3
Total BMI change/Gender	19	**63.33**	11	36.33	30	100
Cause of admission						
Accident	5	16.7	2	6.7	7	23.33
Surgery	9	30	7	23.3	**16**	53.33
Chronic Diseases	0	0	7	23.3	7	23.33
Total	14	46.7	16	**53.3**	30	100
Single	9	30	0	0	9	30
Married	7	23.3	14	46.7	21	70
Total BMI change/ Marital status	16	53.3	14	46.7	30	100

Table 8. Patients' self perceived physiological and food related problems according to BMI change

Physiological food problem	Present	Percentage of subjects					
		"Changed BMI"		"No Changed BMI"		Total	
		NO.	%	NO.	%	NO.	%
Good appetite	Yes	2	5.5	4	13.3	6	20
	No	16	53.3	8	26.7	24	80
Total		**18**	**60**	**12**	**40**	**30**	**100**
Difficult Chewing or Swelling Tasting	Yes	2	5.5	1	3.3	3	90
	No	12	40.2	15	50	27	10
Total		**14**	**46.7**	**16**	**53.3**	**30**	**100**
Mal-absorption	Yes	7	16.7	0	5.5	7	23.3
	No	8	33.3	15	43.3	23	76.7
Total		15	50	13	50	30	100
Increase nutrients requirement	Yes	1	3.3	0	0		
	No	12	40.2	17	56.7		
Poor diet	Yes	3	10	0	0	13	
	No	11	36.7	16	53.3	27	
Total		**14**	**46.7**	**16**	**53.3**	**30**	**100**
Diarrhea	Yes	6	20	2	5.5		
	No	8	26.7	14	46.6		
Total		14	**46.7**	**16**	**53.3**	**30**	**100**
Vomiting	Yes	2	5.5	0	0		
	No	11	36.7	17	56.7		
Total		13	42.2	17	57.8	**30**	**100**
Eat from hospital	Yes	18	60	10	33.3	28	93.3
	No	0	0	2	6.7	2	6.7
Total		**18**	**60**	**12**	**40**	**30**	**100**
Referral to Dietitian*							

Table 9. Correlation of self perceived physiological and food related problems with Gender

Physiological food problem with female gender	Correlation Coefficient (r)
Good appetite	0.50*
Difficult Chewing or Swelling	0.41*
Tasting	
Mal-absorption	0.42*
Increase nutrients requirement	0.30*
Poor diet	0.76*
Diarrhea	0.66*
Vomiting	0.69*
Don't eat from hospital	0.62*
Referral to Dietitian**	

**Pearson's correlation at p < 0.05*
*** Cannot be computed because one of the variable is a constant*

4. DISCUSSION

We aimed to identify the change of nutritional status in hospitalized patients and the recognition of nutritional risk at Benghazi Medical center.

Nutritional status characteristics of patients as estimated by BMI showed similarity to previously estimated for the Libyan population; mean BMI of 25.6 for men and 28.4 for women [21].

During the course of the short hospital stay in our study; mean 4.4 days, mean weight loss was 1.076 kg, and BMI status significantly differed between admission and discharge.

This in fact raises a concern, the process of weight loss, regardless of the individual's usual weight, is considered a process of malnutrition in itself even if the patient remains within the normal standards after the body alterations [22-24].

The problem of weight loss has previously been documented during hospitalization [2,25,26] and it was the main observed variable and the strongest predictor of malnutrition in several studies [27-29].

A significant loss of body fat and muscle mass is frequently observed in malnourished individuals. [26-27]. Even when weight loss is measured indirectly based on patient's observation [30]. Patients in our study underwent a significant loss of mid-arm circumference of about (6.69 cm) during short hospital stay. A significant association with malnutrition was also observed else where [24,28,30-36]. Loss of body fat and tissue mass is regarded as a significant indicator for malnutrition, [24,37] and its estimation through Physical examination, is regarded the best method for identifying malnutrition [38]. The significant change in mid arm circumference along with the observed weight change suggests that BMI change was mainly a change in nutritional status rather than hydration status, as MAC is influenced to a lesser extent by fluid changes [4].

Female gender in our study was a factor associated with losing weight. Though this is highly debatable in literature, this finding corresponds to Splett et al. [39] who observed that weight loss during hospitalization was significantly higher in women than in men. Others [24,40] had shown that males were shown to be more prone to weight loss and malnutrition. On the other hand, no significant difference of nutritional risk between the two genders was also documented elsewhere [41].

Similar to previously documented data [42]; admission to surgical ward was associated with losing weight during hospital staying. And being single as a marital status is also a risk factor for weight loss [43-45].

BMI on admission correlated with weight loss. This corresponds to other findings which states that higher admission BMI was associated with more weight loss among inpatients [46].

A French research described a significant association between prior obesity and risk of malnutrition [46]. This finding can be explained by the negligence in relation to the excess of weight loss by the health care team, which can be true to our study, even knowing that the decrease in weight can be of lean mass, resulting in a worse prognosis. Several studies [47-50] have highlighted the knowledge that being over- weight is a bad prognosis factor due to inadequate dosage of medications for treatment, calculated from body weight, and the chronic inflammatory condition of obese patients.

The most worrying fact in obese patients might be related to the sarcopenia, characterized by a progressive and widespread loss of lean body mass, which is associated to a worsening of the functional status and quality of life and death [51,52].

An association of self perceived physiological and food related problems and those documented in file correlated with the nutritional status change during hospital as estimated by BMI change, more than half of the sample had symptoms of nutritional impact, in which the most prevalent were loss of appetite (80%), diarrhea (26.7%), malabsorption (23.3%), followed by difficulty chewing and increased requirements for nutrient (10%) each.

Appetite decrease is often observed that it is an important variable associated with malnutrition [30-36]. Appetite decrease have been shown to increase the chance of malnutrition in about ten times, [24] and in the study by Ferguson et al [53] this variable showed the best sensitivity and specificity. Decreased appetite is a variable that depends on information obtained from the patients and may indirectly assess food intake.

Alterations in the digestive tract that make nutrient digestion and/or absorption difficult or impossible are often indicated as nutritional risk factors [30,53,54]. In a study by Aquino et al. [24] all variables associated with the digestive tract were significant: nausea and vomiting, diarrhea, lip, mouth and throat alterations, presence of pain with food intake impairment. Changes in the gastrointestinal tract symptoms are usually a result of disease or treatment consequence and may have an important impact on nutritional status of the individual, as they affect food intake [24]. correspondingly, these factors were found to correlate with female gender in our study rather than males, which could explain the observed association of weight loss to female gender, supporting what has been previously been found [39].

We did not carry out a biochemical assessment of nutritional status due to the lack of a reliable biochemical indicator of nutritional status. Albumin concentrations slowly respond to changes in protein status and are more considered a reflection of disease process of the patient rather than nutrient intake. Transferrin on the other hand is more sensitive with a shorter half life, but could be raised during stress and infection and with present iron deficiency. Thyroxin binding prealbumin and retinol binding protein are both related to and respond to changed in nutritional intake but are also affected by disease process [25].

Nevertheless, we intended to reveal attitudes toward such indicators through reporting on such tests, and they were not well documented in patient's files, especially on discharge letters.

Awareness of the significance of patient's nutritional status by doctors may allow early intervention and nutritional status improvement. Early nutrition intervention can reduce rate of complications, length of hospital stay, rates of readmission, cost of care and mortality rates [55].

We studied the nutritional care and awareness of nutritional risk in hospital through documentation of nutrition related information; there appear to be a great negligence of the role of nutrition and the risk of malnutrition in hospital patients. Despite the presence of a number of malnutrition risk factors as identified through the questionnaire and review of case files; as presence of chewing problems, appetite loss, diarrhea, vomiting, and patients refusing to eat from hospital meals, there were no referral to dietitians, nor efficient nutritional consultation, neither clear documentation of nutritional problems and alarm signs. Thus, it is likely that many patients received less than optimal level of nutritional care.

This could be explained by the lack hospital guidelines and nutritional protocols, as well as the possible lack of communication between different staff members and lack of clear definition of roles and responsibilities between different professionals, all of which require further studies to confirm and to apply immediate actions.

None of the charts included data on the patient's nutritional status and, as it had already been shown elsewhere. in Argentina [37] only 38.8% of all clinical charts and in Brazil, [56] only about 12% of all the patients had a record of their usual and current weight. Several studies [25,57-60] reveled that malnourished and those at nutritional risk are not correctly identified or efficiently referred for dietetic intervention (60) and even when the work is done, nutritional intervention and assessment are not sufficiently applied [58].

There were no referral notes found in our study, which is comparable to a study by Bavelaar and colleagues [59] on the performance of medical and nursing staff. According to the authors; information and nutritional status were not included in referrals or in discharge letters during

hospital stay, and very few nutritional interventions were applied while nutritional follow- up was done in only 1.2% of cases [59].

In a study by Middleton and colleagues [57] only one of 137 malnourished patients was documented as malnourished in the medical records and only 21 (15.3%) were referred for nutrition intervention.

While in GOUT et al study [60] only 15% of malnourished patients were correctly identified and documented as such in the medical histories. A dietitian was involved in 45% of malnutrition cases, but only documented 29% of such cases as malnourished.

Failure to flag patients requiring nutrition intervention potentially impacts on length of stay, hospital costs and patient outcomes [54] and can ultimately results in further financial shortfalls to the hospital [60].

Although we did not evaluate knowledge of medical and health professional workers at the hospital, previous studies have emphasized that nutritional status is iatrogenically worsened in the hospital, and that physician and health professional team education can effectively correct this problem [61,62].

Physicians and other health professionals who are not presently being taught to recognize malnutrition are often unaware of which patients are at nutritional risk and usually make no attempt to arrest further nutritional decline until a dramatic deterioration has occurred [61]. Knowledge about the assessment and management of under-nutrition among doctors, medical students, nurses and pharmacists was found to be poor in several studies [62]. The main barriers against implementation of good nutrition care continued to be lack of knowledge, interest and responsibility, in combination with difficulties in making a nutrition plan [15]. This should be the focus of future activities.

Although we aimed to select all patients who met the inclusion criteria during the study period, some factors may influence the generalizability of results and should be noted when comparing to results from different institutions, populations and regions. The study was conducted in one center and implemented by one healthcare professional, which may well limit the generalizability of the current findings. Patients were allocated into the study through hospital admission office, thus patients referred to the medicine and surgical wards from other wards were not included. Another limiting factor is the lack of data on nutritional support for these patients, and lack of documentation and the small sample size. Furthermore, none of admitted patients to the medical and surgical ward were identified as underweight on admission, and the short time hospital stay of patients during the study period. Despite these limitations, this work provides new insights into weight loss in inpatients, and recognition of risk factors in Libya and it provides a base for this field which; to our knowledge, hasn't been covered before.

5. CONCLUSION

The study reveals that despite patient undergoing significant anthropometric changes during hospital stay, there was no information of nutritional status in patient files, very Little, if any, nutritional intervention, little documentation of risk factors, and nutritional consultation was almost lacking. Nutritional status monitoring is the responsibility of the entire healthcare team that treats inpatients. Further studies need to focus on strategies on raising health professional knowledge and awareness of nutritional risk factors and the importance of documentation and application of early nutritional interventions.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

ACKNOWLEDGEMENTS

We are grateful to all patients who participated in the study. We thank Benghazi Medical administration for approving the research and all clinicians and workers at surgical and medical wards who facilitated its conduct. A special acknowledgment goes to the following interviewers and dietitians: Abdulla M., Ali M., Fathi N., and Salem N.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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