Original Research Article

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Analysis of the practice and the reasons for under documentation of body mass index and unintentional weight loss in adult hospitalized patients in Indian set up

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ABSTRACT

Background: The present study analyzed the practice of documentation of BMI and history of unintentional weight loss in adult hospitalized patients on admission by the health care staff and the causes for their under documentation. **Methods:** A cross-sectional study was conducted among 600 healthcare workers, 150 duty medical officers and 450 nurses attending to adult hospitalized patients in both public and private hospitals of Lucknow, U.P., India and nearby districts. Information was collected on the basis of a self-administered questionnaire, on the practice of recording of weight, height, BMI and history of unintentional weight loss in past three months in patient records and also for the reasons for the under-documentation.

Results: Only 54.16% of the staff admitted documenting BMI of the patients regularly in their case notes. Similarly, only 60% of the staff documented history of unintentional weight loss in past three months in patient case notes. Documentation was omitted more by nurses as compared to medical officers. The main reasons for underdocumentation were work overload and time constraints, lack of training, confusion regarding responsibility and mistaken opinion for malnutrition screening.

Conclusions: BMI and weight loss are often not recorded by health staff, more so by nurses. They need to be provided sufficient time to perform nutritional assessment of patient; moreover we should make them competent and delineate roles to them as well as develop a nutrition culture in our health facilities.

Keywords: Adult hospitalized patients, BMI, Weight loss, Under-documentation

INTRODUCTION

Malnutrition is associated with increased morbidity and mortality and hospital admission gives us an opportunity to identify those at risk. Still it is often a neglected entity in the clinical case workup.

Chern et al and also by Kritika et al have recently emphasized the issue of malnutrition in hospitalized adult patients in Asian continent.In a similar stream, feed M.E. (Medical Education) Global Study Group, including members from Asia and Europe and two international bodies i.e., The European Society for Clinical Nutrition and Metabolism (ESPEN) and the National Institute for Health and Clinical Excellence (NICE 2006) have outlined nutritional guidelines to be implemented internationally.³⁻⁸

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Though various nutrition assessment tools are available, it is vital to assess and document BMI and history of weight loss in the past three months on initial admission to hospital. NICE guidelines (2006) clearly state that a body mass index (BMI) of less than 18.5 and also unintentional weight loss which is greater than 10% in the last three to six months may be indicative of malnutrition. But documentation of these is often overlooked. Some probable causes can be organisational culture, work overload, not recognizing the significance of nutrition, lack of nutritional training and confusion regarding nutritional responsibility, which need to be explored so that strategies can be developed to remove the identified causes. 10,11

With this in view we took up this study with the following aims:

- To assess the practice of recording of basic parameters of weight and height and documentation of body mass index and unintentional weight change in the past three months in adult hospitalized patients by nurses and duty medical officers
- 2. To identify the possible reasons for under documentation of these parameters by these health care workers.

METHODS

A cross-sectional study was conducted among both public and private hospitals of Lucknow and nearby districts. Total of 600 healthcare workers, 150 duty medical officers and 450 nurses attending to adult hospitalized patients (patients of age >18 yrs), were enrolled in the study from amongst the hospital staff working in these health facilities. The study was done from October 2016 to February 2017.

Inclusion and exclusion criteria

For this study, we selected health staff who was responsible for initial workup of the patient.

Among doctors we focused on duty medical officers and among nurses we selected those health care workers who have first contact with the patient. Senior doctors and nursing supervisors and administrative staff were excluded from the study.

Study methodology

We collected information, on the basis of a self-administered questionnaire, on the practice of recording of weight, height, BMI and history of unintentional weight loss in past three months and also for the reasons for the under-documentation of these parameters.

The self-administered questionnaire contained three sections:

Section A covered the demographic characteristics of the respondent such as age, sex, profession, department, ward, work experience and type of health facility.

Section B assessed the practice of documentation of weight, height and body mass index and unintentional weight change over past three months in adult hospitalized patients.

Section C assessed the reasons for the under documentation of these parameters in the patient case notes.

The main objective of the study was explained to the respondents and consent was obtained from the individual health workers participating in the study. Confidentiality and personal rights were observed throughout the survey. All the respondents were reassured that the information they give will be kept confidential and their anonymity will be maintained, so may freely express their concerns. they Questionnaires were not labeled with the subject's name or any personal identity. Health facilities' identity was also kept anonymous so that they may be free to participate. Study was started after ethical clearance from the administrative and ethical committees of the health facilities.

Statistical analysis

Sample size calculation

The sample size of 600 for the study was determined using (Cochran, 1977) formula for sample size determination; 12

Using the formulae $n=z^2 pq/d^2$

Where n=the desired sample size, d=degree of precision, z=confidence limits of survey results- set at 1.96 at 95% confidence level

p=estimated proportion of the target population to have documentation of findings. For this Study 'p' will be estimate at 0.64. 13

q=1-p

Therefore the desired sample size was calculated as follows:

n =
$$(1.96)^2 (0.64) (0.36) / 0.0025$$

= $3.84 \times 0.64 \times 0.36 / 0.0025$
= 354

Taking design effect n= $354 \times 1.5 = 531$

Taking consideration of data loss (10%) $n=531+(531\times10/100)$

n = 584

The final sample size was rounded off to 600.

Data analysis

Data from self-administered questionnaires was coded and analyzed using Statistical Package for Social Scientists version 22.0 (SPSS-22.0, IBM Corp., Chicago, USA). Descriptive statistics was used to calculate frequencies of the responses. Differences between the two groups i.e. duty medical officers and nurses were compared using the Chi-Square test. P<0.05 was considered statistically significant.

RESULTS

Out of total 600 total healthcare workers enrolled, 64% of the respondents belonged to government hospitals while 36% were from private health institutes (Table 1). Nurses constituted 75% while rest 25% participants were duty medical officers. 61% of the total respondents were below 30 years of age while 39% were above 30 years. Regarding their service experience, 54% of the respondents had work experience of less than five years while 46% had been in service for more than five years.

Table 1: Demographic characteristics of the respondents.

Variable	Number	Percentage (%)				
Age of the respondent (yrs)						
<30 yrs	366	61				
>30 yrs	234	39				
Sex						
Male	276	46				
Female	324	54				
Profession						
Duty medical officers	150	25				
Nurses	450	75				
Work experience (yrs)						
<5	324	54				
>5	276	46				
Health institution						
Government hospital	384	64				
Private hospital	216	36				

On evaluation of the self-reported questionnaire, we found that 64.5% of the staff admitted measuring weight of the patient, 61% admitted measuring height and only 54.16% admitted documenting BMI of the patients in their case notes regularly. Out of the rest, about a quarter of the staff (23.6%) admitted never documenting BMI while a similar percentage (19.16%) of them was doing it

infrequently. Doctors calculated BMI more frequently (63.3%) compared to nurses (55.1%). Also 21.3% of medical officers and 24.4% of nurses admitted that they 'never' calculated BMI while 19.6% staff reported that they did it occasionally (Table 2).

Regarding documentation of history of unintentional weight loss in past three months in patient case notes, it was observed that 73.3% among the doctors and about 55.6% among nurses reported 'always' doing it. About one tenth among the doctors (9.3%) and about one fifth among the nurses (21.3%) admitted 'never' documenting of this parameter. There was significant difference among these two groups i.e. nurses usually did not document this parameter that frequently as compared to doctors (p<0.05).

On analyzing the possible reasons for underdocumentation among duty medical officers and nurses (Table 3), it was found that, most of them, i.e. about 70% of the doctors and 50% of the nurses disagreed about the statement that the "significance of assessment of these anthropometric measurements is not understood". However, 8% of the doctors and quintuple of that i.e., 40% of the nurses admitted that lack of training to the possible reason for measure was under documentation. Training was found to be more deficient in nurses.

12% of the doctors and most of the nurses (60%) agreed that "the documentation of parameters is cumbersome". Again 26% of the doctors and most of the nurses (62%) agreed that the "work overload and time constraint" was the possible reason for under documentation.

Similarly, 16% of the doctors and about triple the percentage of nurses (44%) agreed that "confusion regarding responsibility" was the possible reason for under documentation.

Again 8% of the doctors and 40% of the nurses agreed that the "lack of clear instructions to assess the parameters" was the possible reason for under documentation.

About 18% of the doctors and double of this (36%) of the nurses agreed that the "patient will not follow medical advice; so no need to do assessment" was the possible reason for under documentation.

About 60% of the doctors and about 52% of the nurses disagreed that "this is a duty of a dietician".

The difference between the opinion of duty medical officers and the nurses for all the probable considered reasons given in table 3 for under documentation of anthropometric measurements was found highly significant (p<0.05) and nurses were more likely to miss the documentation of these parameters due to the above mentioned reasons (Table 3).

Table 2: Analysis of self-reported data for assessment of the practice of documentation of weight, height, body mass index and unintentional weight change by health care staff (M.O.=150 nurses=450, total staff n=600).

Parameter	Profession	Always		Sometimes		Never			
	MO=150 Nurses=450	n	%	n	%	n	%	P value [#]	
Measurement of weight	MO	99	66.0	40	26.7	11	7.3	0.000*	
	Nurses	288	64.0	129	28.7	33	7.3	0.892*	
	Total staff	387	64.5	169	28.16	44	7.33	<0.001**	
Measurement of height	MO	96	64.0	26	17.3	28	18.7	0.554*	
	Nurses	270	60.0	96	21.3	84	18.7	0.334**	
	Total staff	366	61	122	20.33	112	18.66	<0.001**	
Calculation of body mass index	MO	95	63.3	23	15.3	32	21.3	0.190*	
	Nurses	248	55.1	92	20.4	110	24.4	0.190	
	Total staff	343	57.16	115	19.16	142	23.66	<0.001**	
Documentation of history of unintentional weight loss in past three months	MO	110	73.3	26	17.3	14	9.3	<0.001*	
	Nurses	250	55.6	104	23.1	96	21.3	\0.001	
	Total staff	360	60	130	21.66	110	18.33	<0.001**	

^{*}Chi-square test was used to test the difference among always, sometimes and never response group; **One-way chi-square test was used to test the difference among total staff group for always, sometimes and never response group; #p<0.05 denotes significance, MO: Duty medical officer.

Table 3: Analysis of possible reasons among duty medical officers and nurses for under-documentation of weight, height and body mass index and weight change (MO=150 nurses=450, total staff n=600).

Parameter	Profession	Agree		Neut	Neutral		Disagree			
	M.O=150 Nurses=450	n	%	n	%	n	%		P value [#]	
Significance of assessment of these parameters is not understood	M.O.	15	10.0	30	20.0	105	70.0		<0.001*	
	Nurses	112	24.9	113	25.1	225	50.0			
	Total Staff	127	21.2	143	23.8	330	55.0		<0.001**	
Lack of training to measure	M.O.	12	8.0	24	16.0	114	76.0		<0.001*	
	Nurses	189	42.0	90	20.0	171	38.0			
	Total Staff	201	33.5	114	19.0	285	47.5		<0.001**	
Documentation of these parameters is cumbersome	M.O.	18	12.0	33	22.0	99	66.0		<0.001*	
	Nurses	270	60.0	68	15.1	112	24.9			
	Total Staff	288	48.0	101	16.8	211	35.2		<0.001**	
Work overload and time constraint	M.O.	39	26.0	27	18.0	84	56.0		<0.001*	
	Nurses	279	62.0	54	12.0	117	26.0			
	Total Staff	318	53.0	81	13.5	201	33.5		<0.001**	
Confusion regarding responsibility	M.O.	24	16.0	30	20.0	96	64.0		<0.001*	
	Nurses	198	44.0	63	14.0	189	42.0			
	Total Staff	222	37.0	93	15.5	285	47.5		<0.001**	
Lack of clear instructions to assess the parameters	M.O.	12	8.0	30	20.0	108	72.0		<0.001*	
	Nurses	180	40.0	90	20.0	180	40.0			
	Total Staff	192	32.0	120	20.0	288	48.0		<0.001**	
Patients will not follow medical advice; so no need to do assessment	M.O.	27	18.0	24	16.0	99	66.0		<0.001*	
	Nurses	162	36.0	144	32.0	144	32.0			
	Total Staff	189	31.5	168	28.0	243	40.5		<0.001**	
This is a duty of dietician	M.O.	15	10.0	45	30.0	90	60.0		<0.001*	
	Nurses	135	30.0	81	18.0	234	52.0		<0.001*	
	Total Staff	150	25.0	126	21.0	324	54.0		<0.001**	

^{*}Chi-square test was used to test the difference among agree, neutral and disagree response group; **One-way chi-square test was used to test the difference among total staff group for agree, neutral and disagree response group; #p<0.05 denotes significance, MO: Duty medical officer.

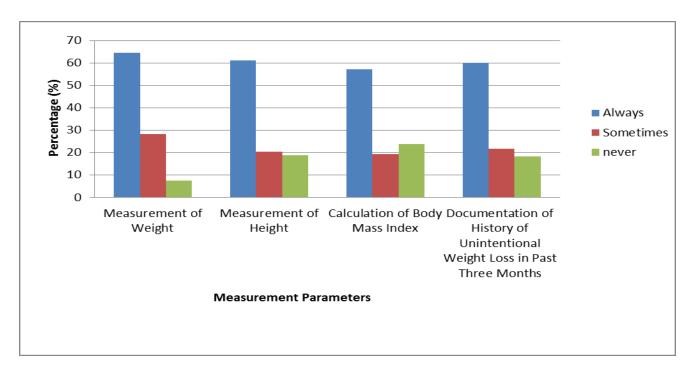


Figure 1: Analysis of self-reported data for assessment of the practice of documentation of weight, height, body mass index and unintentional weight change by health care staff.

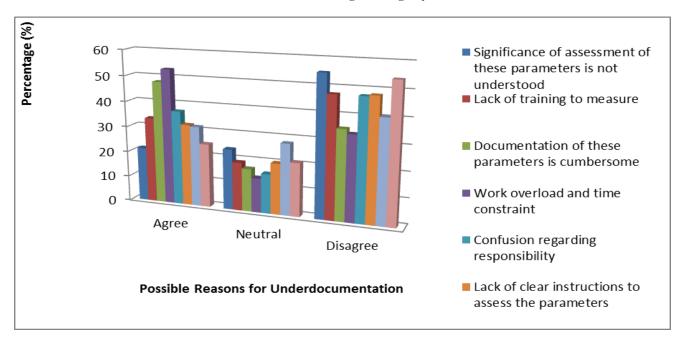


Figure 2: Analysis of possible reasons among duty medical officers and nurses for under-documentation of weight, height and body mass index and weight change.

DISCUSSION

Measurements of weight, height and BMI and documentation of history of weight loss are simple, affordable, non-invasive methods for nutritional screening and should be encouraged at all levels of health facilities. In our study of staff taking care of adult hospitalized patients, we found that though most of the doctors and nurses admitted that they understood the significance of assessing these basic nutritional

parameters, yet screening for the basic anthropometric parameters was deficient.

We found that out of the total staff studied (Table 2), more than 60% admitted measuring weight and height of the patient. But, only half of the staff (54.16%) admitted documenting BMI of the patients regularly in their case notes. BMI was comparatively less documented than weight and height. In a similar study in pediatric patients,

Elizabeth et al found that BMI or weight for height was almost never documented in the medical records. ¹⁴

Moreover, we found that only 60% of the total staff documented history of unintentional weight loss in past three months in patient case notes thereby indicating that a significant proportion of staff used only the weight of the patient as an indicator of nutritional status rather than the percentage of weight loss over past 3 months or unintentional weight loss over past 3 months.

Our study revealed that practice of documentation of basic nutritional parameters is not strictly followed. It further revealed that doctors' documentation score was higher than the other health care workers; probably because they have more in-depth understanding thereby signifying that the level of nutritional knowledge in the health staff influences their attitudes and practices. ¹⁵

On assessing the causes for the under-documentation (Table 3), significant percentage of nurses (42%) agreed that lack of training was the reason; probably they lacked awareness of the technique. The Nutritional Screening Structured Investigation Project (2009) also concluded that one of the main barriers to compliance with nutritional screening was a lack of education and training. We need to train the staff about use of nutritional screening tools and they should gain competence by its regular use in daily practice.

Other important reasons that came out were 'Work overload and time constraint' and that 'Documentation of these parameters is cumbersome'. Multi-tasking and completion of other charts such as observation charts, etc. take competing precedence and nutritional screening goes to the rear. This substantiates the findings of Mowe et al who reported that health staff perceives nutrition to be inferior to other tasks. ¹⁷ Overloading of the health system with multiple patients amid a background of a large population of India seems to be an important hindrance to proper delivery of health care to each and every patient.

Though, most of the staff disagreed that assessment of these parameters is restricted to dietician only, a third of the total staff admitted that there was 'Confusion regarding responsibility' amongst them. A significant percentage of nurses quoted that they lacked clear instructions to assess these parameters. This emphasizes the need of proper delegation of duties to the staff and assigning them responsibility.

About a quarter of the staff was having the mistaken view that since the patient will not follow medical advice, so there is no need to do assessment. In a similar stream, in an Australian study, Porter et al reported that nurses exercised individual judgment by assessing nutrition risk visually. But such clinical judgment may be less reliable.

Attitude of both the health staff and the organization needs to be reoriented to nutrition besides treating the main disease. Though the health staff has to document nutritional parameters, the environment in which they work is likely to influence their ability and application to the task. ¹⁹ Senior clinicians should also take active interest in nutritional issues. ²⁰

Moreover, screening for malnutrition will not be done unless it is considered an integral part of nursing assessment. Screening should also be repeated at appropriate intervals e.g., weekly in those patients who are staying longer or there is a clinical concern (NICE 2006). Porter et al suggested embedding nutritional screening into routine nursing practice. Is Incorporating these into ward round checklists can be of help.

CONCLUSION

Our study suggests that recommendations to assess nutrition status of admitted patients are not strictly adhered to. Documentation of BMI and history of unintentional weight loss is usually omitted; more so by nurses as compared to medical officers.

The possible reasons found were insufficient knowledge and training, work overload and time constraints, confusion regarding responsibility and lack of clear instructions to assess besides mistaken attitude towards nutritional screening. We should train staff, delineate roles and provide them sufficient time to perform the important task of patient nutrition and also develop a nutrition culture in our health set up. This needs to be given priority by health management and policy makers.

In our study, we focused solely on assessing the practice of documenting the basic nutritional parameters and recognizing the impediments to documentation. There is a need for further research to evaluate interventions designed to modify or remove the identified barriers.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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