



## Nursing students' attitudes towards nutritional care of older people: A multicentre cross-sectional survey incorporating a pre post design

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### ABSTRACT

**Background:** Malnutrition is a debilitating and highly prevalent condition in acute hospital settings especially in older person; however international literature revealed negative attitudes in providing nutritional care among nurses and health professionals. Few studies have investigated attitudes towards nutritional care among nursing students, there are no data regarding the Italian context.

**Objectives:** The aim of this study was to explore nursing students' attitudes towards nutritional care in older people.

**Design:** A multicentre cross-sectional survey incorporating a pre post design.

**Setting and participants:** A convenience sample of nursing students of the bachelor's degree in Nursing in the three hospitals were recruited.

**Methods:** Nursing students completed “The Staff Attitudes to Nutritional Nursing Care Geriatric Scale (Italian version) (SANN\_G<sub>ITA</sub> scale)”; first year students completed the scale before (T0) and after (T1) lectures about nutrition and nutritional care.

**Results:** 245 students were enrolled (response rate 88.4%). The overall score of sample attitudes was Median (Me) = 66 (IQR = [60; 72]); at the variation of the year the neutral attitudes are prevalent with a significant tendency to increase the positive attitudes ( $p < .003$ ) and there is a statistically significant difference ( $p < .05$ ) in all dimensions except the “habits” dimension ( $P = .1126$ ). After two months from the end of the lessons regarding nutritional care there is an increase in subjects with neutral attitudes and a decrease in those with negative attitudes ( $P = .05$ ).

**Conclusions:** This study revealed a progressive improvement of the attitudes during the three-year course, underling the importance of nutritional contents provided; understanding the most critical aspects about nutritional care can be helpful in understanding in which areas university education should be improved, in order to train nurses able to assess and face with each patients' assistance need.

### 1. Introduction

Malnutrition is a debilitating and highly prevalent condition in acute hospital settings; in older people, it is the most frequent complication of underlying diseases (Bonetti et al., 2017). The most common type detected in older patients is protein-energy malnutrition, described by Destrebecq and Lodini (2008), as an insufficient intake and/or excessive protein-energy consumption, which leads to a state of malnutrition if protracted.

Recently, the European Society for Clinical Nutrition and Metabolism (ESPEN) has defined diagnostic criteria for malnutrition, in order to unify international terminology; in individuals at risk of malnutrition, the diagnosis should be based on low BMI ( $< 18.5 \text{ kg/m}^2$ ) or weight loss associated with either low BMI (age-specific) or low FFMI using gender-specific cut-offs (Cederholm et al., 2015).

Malnutrition is related to adverse clinical outcomes including quality of life worsening, pressure ulcers development, decrease in wound healing (for example in surgical patients), increased infections

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and mortality rates (Chen et al., 2007; Charlton et al., 2012). Literature reports also the negative effects of malnutrition on length of stay in hospital, consumption of resources and overall costs (Kyle et al., 2005; Abizanda et al., 2016; Gastalver-Martín et al., 2015).

In literature malnutrition prevalence in hospitalized older people varies from 10.3% to 75.8% (Lucchin et al., 2009; Meijers et al., 2009; Vanderwee et al., 2010; Charlton et al., 2012; Burgos et al., 2012; Huong et al., 2014; Nazemi et al., 2015; Redondo et al., 2015). A recent Italian multicentre study reported a prevalence rate of 22.4% (Bonetti et al., 2017). Overall, these findings point out the importance of prevention and early identification of malnutrition. Nurses play a role of paramount importance in both areas.

Despite the many validated tools for nutritional screening, several studies still report inadequate healthcare practises among nurses, who give low priority to nutritional care so that the assessment of nutritional status is often not performed (Adams et al., 2008; Bavelaar et al., 2008; Persenius et al., 2008; Bonetti et al., 2013a; Bonetti et al., 2017). Moreover, international studies revealed negative attitudes in providing nutritional care among nurses and health professionals (HPs), for example during mealtimes, a critical moment in which nurses play a strategic role in monitoring food intake and optimize meal times environment (Bachrach-Lindström et al., 2007; Bonetti et al., 2013a; Bonetti et al., 2017; Fletcher and Carey, 2011). A recent Italian study conducted in Liguria, the Italian region with the highest aging index, confirmed the persistence of negative attitudes among nursing staff: 21% of the sample showed negative attitudes to nutritional care, 53% neutral attitudes and 26% positive attitudes (Casanova et al., 2015). Negative attitudes result in inappropriate healthcare practices, as explained by Fishbein & Ajzen in the Theory of the Reasoned Action, by which behavioural intentions are determined by attitudes to behaviours and subjective norms (Fishbein and Ajzen, 1975). If we apply the theory to malnutrition, we can conclude that positive attitudes among nurses to nutritional care can reflect a correct and adequate approach to patients' nutritional needs.

Given the many complications that malnutrition causes, it is very important that appropriate attention be paid to nutritional skills in the education of nurses and other HPs. Studies report that often in the educational curricula of HPs nutritional aspects are treated superficially, not allowing the development of adequate skills (Thomas et al., 2006; Adams et al., 2010; Dimaria-Ghalili et al., 2013; DiMaria-Ghalili et al., 2014; Kris-Etherton et al., 2014; Levy et al., 2014; Kris-Etherton et al., 2015).

Adams et al., in 2010, reported that doctors' training in nutritional care in the US was still inadequate (Adams et al., 2010). Even in the most recent study of Dimaria-Ghalili et al. (2013) they point out that the training curricula of physicians and other HPs, including nurses, in the US do not allow for the development of sufficient knowledge and skills in nutritional care. DiMaria-Ghalili et al. (2014) stress that this knowledge and skills are of fundamental importance to ensure that HPs are able to properly assess the caloric consumption and nutritional status of their patients.

This inadequacy of training is also recognized by Kris-Etherton et al. (2014), who emphasize how important diversified strategies are to develop these skills in HPs. In another study by Kris-Etherton et al. (2015) the authors point out that in many countries there is no training on nutritional issues in the training of doctors.

Levy et al. (2014), highlighted how one of the barriers to the adoption of specific training courses on nutritional aspects is to be found in the negative attitudes of trainers, who first consider these contents to be of secondary importance and do not promote their development in the training curriculum. Although we cannot say with certainty that there is a correlation between knowledge and positive attitude, it is very likely that the lack of knowledge and skills does not develop in professionals that sensitivity that allows to consider the nutritional aspects of the treatment important, favouring or developing a negative attitude (Levy et al., 2014; Bonetti et al., 2017).

International literature also reports that nurses often have a negative attitude towards older care (Liu et al., 2013; Hanson, 2014; Rush et al., 2017). The combination of negative attitudes and lack of knowledge about nutritional care and a negative attitude towards older people greatly increases the risk that these individuals, will receive inadequate nutritional care.

It is therefore important from the early steps of education to ensure that future professionals pay due attention to nutritional aspects, especially in fragile populations such as older people.

So far, most academic studies have focused on knowledge of nutritional aspects rather than attitudes.

Based to our best knowledge, there are currently few studies aimed to assess attitudes towards nutritional care among nursing students (Thomas et al., 2006).

The goal of the present study was to measure nursing students' attitudes towards nutritional care in older hospitalized patients, by using the The Staff Attitudes To Nutritional Nursing Care Geriatric Scale (Italian version) (SANN<sub>G<sub>ITA</sub></sub> scale) (Christensson and Bachrach-Lindström, 2009; Bonetti et al., 2013b).

## 2. Material methods

### 2.1. Design and setting

A cross-sectional multicentre study was carried out, by administration of a paper questionnaire (Hallberg, 2008). Students of the degree course in Nursing at the University of Milan were involved in three sections of the course (San Paolo Hospital, Luigi Sacco Hospital, San Donato Hospital in Milan).

The degree course in Nursing is present in 16 hospital sites in the territory of Milan and the province of Milan. Students take periods of theoretical lessons followed by practical training periods, according to the training objectives of the year attended. There is no specific course on nutritional assistance in the training curriculum but the concepts related to this topic are covered in different courses. Students can choose some optional courses, specific about nutritional assistance. The questionnaire consisted of a demographic and training curriculum section and a validated questionnaire to assess attitudes to nutritional care in the older people (Christensson and Bachrach-Lindström, 2009; Bonetti et al., 2013b).

### 2.2. Participants

All students enrolled in the three years of the bachelor's degree in Nursing in the three hospitals were invited to participate. Because this is one of the few studies analysing students' attitudes towards nutritional care of older people (Thomas et al., 2006) and the first one using the SANN<sub>G<sub>ITA</sub></sub> scale, in order to hypothesize the number of subjects needed for this study, we took into consideration the papers by Casanova et al. (2015) and Bachrach-Lindström et al. (2007) who enrolled registered nurses and nurses' aides. Based on their findings, we initially hypothesized to involve at least 230 students. Post-hoc power analysis on our sample revealed an actual power of all statistical tests between 81% and 83%, which can be considered satisfactory.

### 2.3. Data collection

For each hospital a tutor was identified to organize the distribution and collection of the questionnaires. The first author went to each hospital personally and explained the objectives and methods of answering the questionnaire. The questionnaire was administered during the classroom tutoring in each venue, in May, June and July 2017. A paper copy of the questionnaire was delivered to students by the nurse responsible for data collection in each hospital. Only First-year nursing students were asked to respond to the tool twice: before (T0) and after (T1) lectures about nutrition and nutritional care, in order to assess the

impact of the actual training program on students' attitudes. While the students were filling out the questionnaire, the nurse responsible for data collection supervised the class to ensure that students did not consult information sources. Each student was asked to give his/her written consent. Students who did not wish to join the study left the classroom. Confidential data was not collected and consent and questionnaire were kept separate to ensure confidentiality and anonymity. The first author collected the questionnaires and the signed written consents from each hospital.

#### 2.4. Description of the tool

The SANN\_G<sub>ITA</sub> scale (Christensson and Bachrach-Lindström, 2009; Bonetti et al., 2013b) is composed of 18 items. The answers are articulated on a Likert scale from 1 to 5 (1 = completely agree, 2 = partially agree, 3 = neither agree nor disagree, 4 = partially disagree, 5 = completely disagree).

The tool examines the attitudes of nurses, dividing them into 5 dimensions of nutritional care from the literature:

1. Norms (items: 5,10,11,13,14): investigates the nurse's knowledge of the organisation and implementation of meals.
2. Habits (items: 1,3,4,9): investigates how the nutritional needs and preferences of patients are considered and how the right amount of food is estimated.
3. Assessment (items: 2,8,12,18): investigates how the nutritional status of patients is evaluated, the first step in identifying malnourished patients.
4. Interventions (items: 7,15,16): includes all the interventions necessary to face the disorders linked to malnutrition.
5. Individualization (items: 6,17): includes all the themes concerning the individualization of meals, a fundamental factor due to the high heterogeneity of older people. The importance of an individualised approach is in fact highlighted and recommended by literature.

A global score of < 54 identifies the overall presence of a negative attitude in the respondent; a score of ≥72 reflects positive attitudes, while a score of between 54 and 71 frames a neutral attitude.

The range scores and cut-off of each domain can be analysed as described in Table 1.

The tool was completed by adding a final part aimed at collecting general information from the subjects involved in the study, such as gender, age, year of course, nationality, as well as two questions about the training received regarding nutritional care.

#### 2.5. Statistical analysis

Continuous variables have been described with mean and standard deviation if normally distributed, with median and interquartile range otherwise. The Kolmogorov-Smirnov test was used for the normal test. To compare the level of attitude in relation to the main variables considered, the Mann Whitney test was used if there were two comfort groups and the Kruskal Wallis test if there were more than two groups. A multivariate analysis was conducted to determine the association of negative attitudes with the most important demographic and

**Table 1**  
Cut-off of positive attitudes for each domain of the SANN\_G<sub>ITA</sub> scale.

Domain (min–max)	Cut-off for positive attitudes
Norms (5–25)	≥20
Habits (4–20)	≥16
Assessment (4–20)	≥16
Intervention (3–15)	≥12
Individualization (2–10)	≥8
Total score (18–90)	≥72

educational variables (Polit & Tatano Beck, 2017). The threshold of significance of the tests was set at 5%. The analyses were conducted with SAS University Edition for MacOS.

#### 2.6. Ethical consideration

The research was approved by the president of the nursing degree course and the directors of the course sections involved in the study. Each student signed a written informed consent, which stated that participation in the study was free and that the data would be treated confidentially. The research was carried out following the Helsinki guidelines.

### 3. Results

#### 3.1. Participants

A total of 245 students were enrolled (response rate 88.4%) from three schools of nursing. The mean age of the participants was 22.3 years (SD ± 4.1), with a range between 19 and 41 years. The majority of them were female ( $n = 189$ , 77.14%). Among them, 111 (45.31%) were in their first year of course, 68 (27.76%) were in their second year, 66 (26.94%) were in their third year; no significant differences by gender ( $p < .05$ ).

193 persons (78.8%) attended basic courses, as a part of the core curriculum of a nursing bachelor's degree, proposing contents concerning nutrition or nutritional care; the students judged the training received as fairly or very adequate in 131 cases (67.86%). 208 students (84.90%) had not participated in additional optional courses concerning nutrition and nutritional assistance. Of these, 199 subjects (95.67%) considered a possible additional course to be “quite useful” or “very useful” for their education (Table 2).

The overall score of sample attitudes had a Median (Me) of 66 and an Interquartile range (IQR) of [60;72]; for the first year the overall score was Me = 64 (IQR = [57;70]), for the second year it was Me = 68 (IQR = [62;72] and for the third year it was 70 [65;75]. It increased significantly between the three years ( $p < .0001$ ).

Also the distribution of positive, neutral and negative attitudes differs significantly between the three years of the course; Table 3 shows how at the variation of the year the neutral attitudes are prevalent with a significant tendency to increase the positive attitudes ( $p < .003$ ).

#### 3.2. Differences in attitudes for each domain in each year

The score obtained in each domain (norms, habits, assessment, interventions and individualization) was also calculated. There is a statistically significant difference in the dimensions “norms” ( $p = .0017$ ), “assessment” ( $p = .004$ ), “intervention” ( $p = .001$ ), and “individualization” ( $p = .008$ ) but not in the “habits” dimension ( $P = .1126$ ) (Table 4).

#### 3.3. First year student's post-education results

All the students attending the first year ( $n = 111$ ) who participated in the study at T0 re-filled the SANN\_G<sub>ITA</sub> Scale at T1, after about two months from the end of the lessons regarding nutritional care. The number of students presenting positive attitudes remains unchanged ( $n = 21$ ) but there is an increase in subjects with neutral attitudes and a decrease in those with negative attitudes ( $P = .05$ ) (Table 5).

According to the SANN\_G<sub>ITA</sub> scale, students who participated in additional optional courses concerning nutrition and nutritional care reported a median score of 71 [62; 65], with statistically significant differences ( $p = .015$ ) with the remaining part of the sample that got a median score of 65 [60,71]. Also, having attended classes regarding nutrition/nutritional assistance within the various courses included in

**Table 2**  
Demographic characteristics of participants.

Characteristics	First year (N = 111)	Second year (N = 68)	Third year (N = 66)	Total (N = 245)	
Age* Mean ( ± SD) in years	21.2 ( ± 4.2)	22.3 ( ± 3.6)	24.2 ( ± 3.9)	22.3 ( ± 4.1)	
Gender*	(N/%)	(N/%)	(N/%)	(N/%)	
Female	82(73.9)	61(89.7)	46(69.7)	189(77.1)	
Male	29(26.1)	7(10.3)	20(30.3)	56(22.9)	
Ethnicity (N/%)*	(N/%)	(N/%)	(N/%)	(N/%)	
European	103(92.8)	58(85.3)	60(90.5)	221(90.2)	
South American	4(3.6)	5(7.4)	5(7.6)	14(5.7)	
Asian	1(0.9)	3(4.4)	1(1.5)	5(2)	
Est European	3(2.7)	2(2.9)	0	5(2)	
Education about nutrition and nutrition care received until now (N/%)*	(N/%)	(N/%)	(N/%)	(N/%)	
Yes	60(54)	67(98.5)	66(100)	193(78.8)	
No	51(46)	1(1.5)	0	52(22)	
	Useless (N/%)	Hardly useful (N/%)	Useful (N/%)	Very useful (N/%)	Total (N/%)
Usefulness of Elective courses on nutrition	3(1.4)	6(2.9)	91(43.8)	108(51.9)	208
Appropriateness of education received till now	6(3.2)	56(29)	107(55.4)	24(12.4)	193

**Table 3**  
Frequencies of positive, neutral and negative attitudes among the students divided by year.

Year of course	Positive attitudes N (%)	Neutral attitudes N (%)	Negative attitudes N (%)	Total N (%)
1st	21 (18.92)	71 (63.96)	19 (17.12)	111
2nd	20 (29.41)	46 (67.65)	2 (2.94)	68
3rd	26 (39.39)	33 (50.00)	7 (10.61)	66
Total	67	150	28	245

the core curriculum generated a statistically significant difference ( $p = .0163$ ), with medians of 68 [61; 73] in who attended classes and 64 [57; 68] in who did not.

Multivariate analysis confirmed the results of the bivariate tests regarding the domains of the scale (Table 6) except for those regarding education ( $p = .29$  and  $p = .17$  for optional courses and for classes on nutrition respectively). However, it should be noted that not all students have attended elective courses, and that the results of the before-after comparison point out the importance of education.

#### 4. Discussion

The primary aim of this study was to measure nursing students' attitudes towards nutritional care in older hospitalized individuals using the validated instrument SANN\_G<sub>ITA</sub> scale. The study shows a neutral global attitude, with a trend towards positive attitudes, showing the will of going in-depth with the nutritional thematic. Interestingly, it was found an increase in score to the change of the academic year, which suggests progressive positive changes in students' attitudes during their academic track. This improvement can be traced back to the acquisition of progressively much fuller knowledge inherent nutritional care, which is the result of the different contents provided by university's teaching and by the various experiences of internship

**Table 4**  
Scores in each domain and year of course.

Domain	Cut-off for positive attitudes	1st year Me [IQR]	2nd year Me [IQR]	3rd year Me [IQR]	p-Value	Score on the overall sample Me[IQR]
Norms	≥ 20	17[14;18]	17[15;20]	18[15;20]	.0017	17[14;19]
Habits	≥ 16	15[13;17]	16[14;18]	15[14;17]	.1126	15[13;18]
Assessment	≥ 16	14[12;16]	14[12;16]	15.5[14;17]	.004	14[12;16]
Intervention	≥ 12	11[9;13]	12[12;13]	13[11;14]	.001	12[9;14]
Individualization	≥ 8	8[6;9]	8[7;10]	9[7;10]	.008	8[6;10]

Me = Median; IQR = Interquartile range.

**Table 5**  
Attitudes of students in the first year before and after training.

	Positive n (%)	Neutral n (%)	Negative n (%)	p-Value
T0	21(19)	71(64)	19(17)	.05
T1	21(19)	87(78.4)	3(2.6)	

**Table 6**  
Scores in the domains of the scale between the three years of course (multivariate analysis).

Domain	p-Value
Norms	.01
Habits	.13
Assessment	.02
Intervention	.001
Individualization	.005

gained. These results are consistent with the study by Thomas et al. (2006) that found that students with previous exposure to nutritional education earned more positive score in terms of knowledge and attitudes.

As suggested by literature, higher awareness and knowledge of nutritional aspects also has an effect on attitudes, which improve consequently (Levy et al., 2014; Hanson, 2014; Bonetti et al., 2017).

Third-year students got a median score of 70, significantly higher compared with other two years. However this score turns out to be below the minimum score for positive attitudes, reflecting a neutral attitude. This data is particularly significant since it foreshadows the profile of an individual who is nearing at the end of his university track and so close to the exercise of the nursing profession, marked by a lack of positive attitude, which can be translated in a not appropriated approach and interventions in nutritional care. In view of this result, it

could be appropriated to analyse the nutritional education received from university. Currently the nursing degree course of The University of Milan provides specific contents related to nutritional care for a limited number of teaching hours, during the first and second year course. In order to define more in which areas university courses should be improved, we can examine different scores obtained by each SANN\_G<sub>ITA</sub> scale's dimension: "norms", "habits", "assessment", "intervention", "individualization". "Assessment" and "habits" obtained the lowest scores, underling a lack of a positive attitude in assessing patient's nutritional status, which represents the first step in identifying malnourished patients, and in considering specific individual's nutritional needs and preferences. This result agrees with international literature, in which are reported negative habits for nutritional screening and assessment among nurses; many studies identify the cause in underestimation of the problem and in a reduced awareness of the negative consequences related to malnutrition, in addition to a limited use of validated nutritional screening tools (Persenius et al., 2008; Fletcher and Carey, 2011; Bonetti et al., 2013a; Green and James, 2013; Bonetti et al., 2017).

As suggested by literature (Kris-Etherton et al., 2014; Kris-Etherton et al., 2015), it would be important to educate future HPs to early identify persons with malnutrition, through simple assessment tools, such as the Mini Nutritional Assessment (Cereda et al., 2016).

In line with the results previously described about the global improvement of the attitudes, we can see a progressive increase of score obtained also in each SANN\_G<sub>ITA</sub> scale's dimension. No statistically significant differences have been found for the dimension "Habits", which analyses how patient's nutritional needs and preferences are considered, and may reflects a problem about students' experiences in hospital wards. Several studies report bad habits among nurses about this issue, often justified on lack of time or other priorities (Christensson and Bachrach-Lindström, 2009; Bonetti et al., 2013a; Casanova et al., 2015; Bonetti et al., 2017). In addition to hypothetical changes to the university's courses, it could be useful to organize refresher courses about nutritional care for nurses, who represent a reference point for the student during his internship experiences.

From the analysis of the distribution of the various attitudes (positive, neutral and negative) between the three year courses, is noticeable a clear prevalence of neutral attitudes. However, a significant increasing trend of positive attitudes, encountered in 18.92% of first-year students, in 29.41% of the second year and in 39.39% of third year, confirming the improvements emerged from the analyses of the global scores.

The comparison between scores obtained in T0 and T1 of first-year students shows an improvement at the threshold for statistical significance ( $p = .05$ ); in particular, we can notice that 16 students changed their attitude from negative to neutral and the number of students with positive attitudes remains unchanged. This result could be traced back to the theoretical training received, underling the positive impact of these contents.

Therefore, this results confirms the importance of education in improving attitudes towards nutritional care and in particular when nurses take care for older people as stated in literature (Thomas et al., 2006; Liu et al., 2013; Hanson, 2014; Rush et al., 2017; Bonetti et al., 2017). Based on the results of this study and international literature it is necessary to raise the awareness about this issues firstly starting from educators and who develop nurse students' curricula (Liu et al., 2013; Hanson, 2014; Dimaria-Ghalili et al., 2013; DiMaria-Ghalili et al., 2014; Kris-Etherton et al., 2014; Kris-Etherton et al., 2015; Rush et al., 2017). Educators aware about the importance of nutritional care in nurse profession will probably pair more attention in education about this topic.

Older people are steadily increasing in the world population. It is therefore important to improve the skills of student nurses in caring for the older in general and nutrition in particular, given its impact on health (Liu et al., 2013; Hanson, 2014; Dimaria-Ghalili et al., 2013;

DiMaria-Ghalili et al., 2014; Kris-Etherton et al., 2014; Kris-Etherton et al., 2015; Rush et al., 2017). A greater knowledge and awareness of the peculiarities of care in older people which starts from the training of the nurse, can lead to higher quality care and consequently better outcomes for the patients.

## 5. Limitations

The main limitation of this study is the no random sample size. The study included students of the bachelor's degree in Nursing in three hospitals, who represent just a small part of students attending the nursing degree course of The University of Milan. It would be interesting continue the study including a wider and random sample, in order to support the results emerged from this study. It must be emphasized that we obtained a high response rate (88.4%), thus we can consider the data collected representative of the population studied. Lower response rates could indicate that students joined the study just because they were interested in nutrition and therefore their attitude at baseline was better than non-responders. It could be interesting to assess first-year students' attitudes for a third time (T2) at the end of their first internship experience, to verify how the attitudes towards nutritional care could be influenced also by the first direct contact with the patient. It could be also interesting conduct a survey in other universities in our country, to obtain a wider picture of nursing students' attitudes towards nutritional care of older people.

## 6. Conclusions

The aim of this study was to assess nursing students' attitudes towards nutritional care in older people. This study revealed a progressive improvement of the attitudes during the three-year course, underling the importance of nutritional educational contents provided; however the results highlighted relevant lacks in specific aspects about nutritional care, which could be studied to understand in which areas university education should be improved, in order to train nurses able to assess and face with each patients' assistance need. The findings of this study can be considered the first step of a project intended to deepen nursing students' attitudes towards nutritional care.

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## Conflict of interest statement

The authors declare that they have no conflict of interest.

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## Author contributions

MB, PF, LB and ST: conceived the study, trained the tutors for data collection, analysed the data and prepared the manuscript; AD, MB and PF: organised data collection; MB: conducted data collection; AD: managed the process of approval of the study by the faculty and the degree courses directors; AD and LB: supervised the manuscript; All authors revised and approved the final text of the article.

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