









EMPIRICAL STUDIES

Self-reported documentation of goals and outcomes of nutrition care – A cross-sectional survey study of Scandinavian dietitians

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Abstract

Background: The documentation of goals and outcomes of nutrition care in Electronic Health Records is insufficient making further exploration of this of particular interest. Identifying common features in documentation practice among Scandinavian dietitians might provide information that can support improvement in this area.

Aims: To explore the associations between clinical dietitians' self-reported documentation of patients' goals and outcomes and demographic factors, self-reported implementation of the systematic framework the Nutrition Care Process 4th step (NCP) and its associated terminology, and factors associated with the workplace.

Methods: Data from a cross-sectional study based on a previously tested web-based survey (INIS) disseminated in 2017 to dietitians in Scandinavia ($n = 494$) was used. Respondents were recruited through e-mail lists, e-newsletters and social media groups for dietitians. Associations between countries regarding the reported documentation of goals and outcomes, implementation levels of the NCP 4th step, demographic information and factors associated with the workplace were measured through Chi-square test. Associations between dependent- and independent variables were measured through logistic regression analysis.

Results: Clinically practicing dietitians ($n = 347$) working in Scandinavia, Sweden ($n = 249$), Norway ($n = 60$), Denmark ($n = 38$), who had completed dietetic education participated. The reported documentation of goals and outcomes from nutrition intervention was highly associated with the reported implementation of NCP 4th step terminology (OR = 5.26; $p = 0.009$, OR = 3.56; $p = 0.003$), support from the workplace (OR = 4.0, $p < 0.001$, OR = 8.89, $p < 0.001$) and area of practice (OR = 2.02, $p = 0.017$). Years since completed dietetic training and educational level did not

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have any significant associations with documentation practice regarding goals and outcomes.

Conclusion: Findings highlight strong associations between the implementation of the NCP 4th step terminology and the documentation of goals and outcomes. Strategies to support dietitians in using standardized terminology and the development of tools for comprehensive documentation of evaluation of goals and outcome are required.

KEYWORDS

cross-sectional study, documentation, goal-setting, nutrition care process, outcome evaluation, patients records, standardisation

BACKGROUND

Documentation in patients' healthcare records is an essential component of health care [1]. It supports verbal communication, the clinical decision process, and transparency of care, and improves the transfer of clinical information [1–5]. The documentation of patients' goals and outcomes is particularly important in the provision of person-centered care, evaluation of the quality of care, patient safety, and continuity of care [6–8]. Goal setting involves the selection of specific, measurable, achievable, realistic, and time-defined goals [9, 10]. It also involves identifying goals that are meaningful to patients [11]. Outcomes are the results directly related to the goals, the signs and symptoms, and the intervention plan. [9, 10] These should reflect the patient's condition, behaviour, and perceptions [12]. The documentation and continuous monitoring and evaluation of goals and outcomes enable the identification of progress and necessary adaptation of interventions [13].

Studies have identified flaws in the quality of patient records and a need for improvement in documentation practice among healthcare professionals [14–18]. Organisational factors, such as departmental policies and managerial support, have been shown to impact the level of commitment to documentation [1, 19–21]. Although the widespread use of electronic health record (EHR) systems in Scandinavia may facilitate this process [22–24], a number of studies have revealed inadequate documentation of patients' goals and outcomes [2–4, 13, 25, 26], not least in nutrition care [14, 15]. Factors such as work experience and clinical judgement may influence documentation practices [1, 20, 27]. For example, higher education among nurses is associated with greater expertise and improved quality of care [28]. However, little is known about the association between these factors and the documentation of goals and outcomes by dietitians.

Systematic frameworks have been developed to structure the healthcare process [29]. These frameworks

include profession-specific terminologies that enable the collection of structured data and facilitate evaluation. The Nutrition Care Process (NCP) was developed by the Academy of Nutrition and Dietetics (formerly the American Dietetic Association) for dietitians [30]. This systematic framework includes four steps: nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation [30]. An associated terminology, the NCPT, comprises standardised terms for each step [30] (Table 1). The framework is dynamic and the process requires critical thinking in the provision of individualised care for each patient [10].

Each step in the NCP includes terms related to the goals and outcomes of the nutrition intervention (Table 1). Patient status, nutritional intake, quality of life, and knowledge needs are assessed in relation to accepted standards or goals. Where possible goals should be set collaboratively with the patient while planning the intervention, and outcomes relevant to the diagnosis, intervention, and goals continuously be monitored [10]. Similar frameworks are used by other healthcare professions, although with certain differences [29].

The NCP is in a relatively early phase of implementation in Scandinavia [31]. It was first introduced in Sweden in 2011, in Norway in 2014, and initially in parts of Denmark in 2003 and fully adopted in 2013 [24]. The NCPT was translated into Swedish in 2011, Norwegian initially in 2016 (terms for 2nd step and 3rd step, all steps in 2017), and Danish in 2016. The NCP is the most internationally implemented nutrition care model for dietitians and is supported by the International Confederation of Dietetic Associations. It is currently incorporated to varying degrees in dietetic education in the Scandinavian countries [31].

The implementation of the NCPT is in progress in the Scandinavian countries [24], especially regarding NCP's 4th step, nutrition monitoring and evaluation [24]. Since the documentation of patients' goals and outcomes in healthcare records is essential to enable transparency and

TABLE 1 Goals and outcomes as described in the Nutrition Care Process [6, 30]

The process	Nutrition assessment	Nutrition diagnosis	Nutrition intervention	Nutrition monitoring and evaluation
Description	Collect, classify, and synthesise important and relevant data needed to identify nutrition-related problems and their causes	Identification and labelling of an existing nutrition problem that the dietitian is responsible for treating	Purposely planned action designed with the intent of changing a nutrition-related behaviour, risk factor, environmental condition, or aspect of health status to resolve or improve the identified nutrition diagnosis or nutrition problem	Identifies outcomes/indicators relevant to the diagnosis and nutrition intervention plans and goal
Critical thinking in identifying goals/outcomes	Analysis of the patients' nutritional status compared to accepted standards, recommendations, and/or goals	Prioritising identified problems Identifying the problem that can be solved/managed by the intervention	Setting goals and prioritising Collaborating with the patient to identify the goals of the intervention for each diagnosis	Using appropriate reference standards for comparison Defining where the patient is in terms of goals and expected outcomes Explaining variance from expected goals and outcomes Determining factors that help or hinder progress Deciding between discharge or continued care

evaluation of care [32], its further exploration is of particular interest. The process of NCP and its terminology are closely related, yet they can be studied as two separate units [24]. Healthcare systems and EHR implementation levels in Scandinavian countries have similarities [33, 34], so finding common features might provide information that can support the improvement of documentation. This study explores the associations between dietitians' self-reported documentation concerning patients' goals and outcomes with (a) demographic factors, (b) self-reported implementation of NCP's 4th step and its terminology, and (c) factors associated with the workplace.

MATERIAL AND METHODS

Study design

This is an explorative cross-sectional study assessing Scandinavian dietitians' self-reported documentation routines using data from a web-based survey, the International Nutrition Care Process and Terminology Implementation Survey (INIS) [31], conducted from February to April 2017. The survey aimed to assess NCP and NCPT implementation globally so was disseminated to dietitians in 10 countries [31]. The present study has evaluated responses from the Scandinavian countries; the results from the global study are published elsewhere [31]. This study adheres to the STROBE checklist [35].

Setting and sample

Registered dietitians were invited to participate. An invitation letter or announcement with a link to the web-based survey (developed in [SurveyMonkey.com](https://www.surveymonkey.com)) was distributed through e-mail lists, e-newsletters via the NDAs, local dietetic networks, and professional groups on social media. Reminders were sent after 3 and 6 weeks. At the time of the study, the total number of actively practicing dietitians in Scandinavia was approximately 1100 in Sweden, 500 in Norway, and 1100 in Denmark [24]; the ambition was to reach as many of these as possible. The inclusion criteria for this particular analysis were dietitians working with patient-related tasks in Scandinavia with a minimum dietetic education at the bachelor's level or certificate degree.

Data collection

The data-collection tool was developed and validated based on expert assessment, cognitive interviews, and a pilot survey [24, 31]. It was translated and tested in

Swedish, Danish, and Norwegian, respectively [31]. The tests showed high reliability and content validity of the tool in the different languages [31]. Experts ($n = 42$) rated the content validity and clarity of the survey twice, the test showed a scale content validity index average of 0.98. To assess intra-rater reliability, a test–retest analysis was conducted, showing Krippendorff's $\alpha = 0.75$.

The tool consists of four modules: (i) demographic factors; (ii) NCP (process), NCPT (terminology) implementation levels; (iii) NCP/NCPT attitudes; and (iv) NCP/NCPT knowledge; the results presented in this study focus on data from the first two modules. They include information concerning organisational factors, which have been included in this study. A summary of included items is presented in Table 2. A detailed description of the tool and response options has been published previously [24, 31]. The survey starts with control questions asking if the respondent is a registered dietitian. An additional control question was included in the survey concerning whether the respondents had completed dietetic education. This was to exclude the participation of ineligible respondents, such as students, in the study.

Documentation of patient's goals and outcomes (dependent variables)

Two items from INIS module (ii) measuring the respondents' self-reported routines for documentation of patients' goals and outcomes were used. Respondents were asked to report (a) how often they document patients' goals for the nutrition intervention and (b) how often they document outcomes following the nutrition intervention. Five response options were available for each question: *never*, *rarely*, *occasionally*, *often*, or *always*. To simplify the analysis, the 5-point response scale for the two items was dichotomized into the low extent and high extent (Table 2).

Variables related to the documentation of patients' goals and outcomes (independent variables)

Demographic factors

Demographic information was collected regarding country of residence, the highest level of dietetic education completed, and years since completed dietetic training. Respondents were asked to select an educational level from the following options: *have not completed any education*, *bachelor's degree*, *master's degree*, *doctoral degree*, and *others*. This item was dichotomized into first-cycle degree program (bachelor's degree or certificate degree) and

second/third-cycle degree program (master's degree or Ph.D.), while respondents selecting "have not completed any education" ($n = 4$) were excluded.

Years since completed dietetic training was categorised into three categories: 5 years or less (2012–2017), more than 5 years and up to 10 years (2006–2011), and 10 years or more (1978–2005).

Implementation levels of the NCP and its terminology

Respondents were asked to indicate the level of implementation of NCP and NCPT respectively for each of the four NCP steps through responses *never*, *rarely*, *occasionally*, *often*, or *always*. Definitions of each NCP step and its terminology were provided for each of these questions (for details [24, 31]). The 5-point response scale was dichotomized into the low extent and high extent (Table 2).

Factors associated with the workplace

Respondents were presented with different options for an area of practice; two options specific to patient-related clinical work were included in the analysis: contact with inpatients (patients admitted to the hospital) or contact with outpatients (patients seen by appointment in primary care or hospital outpatient clinics). A new category was created for respondents who selected both inpatients and outpatients. Respondents who worked in other areas were excluded. Responses to a question concerning whether respondents' workplaces expect them to document patients' outcomes, *no*, *do not know*, *not applicable*, *other*, *yes*, were dichotomized into a variable describing whether the respondent clearly perceives this expectation or not: yes and no (Table 2).

Statistical analysis

SPSS version 28 for Windows was used for data analysis [36]. Response options for the variables and scales were categorised (Table 2). Missing data for the independent variables varied between 0 and 16 responses. Descriptive statistics were used to review frequencies and distributions. The analyses were performed as follows:

Step 1: Initial examination of associations between the variables prior to the regression analysis was conducted through simple logistic regression (one for each dependent variable with each independent variable). This was to facilitate the findings of any unexpected changes in

TABLE 2 Description of dependent and independent variables and their categorization

Variables	Categorization of response alternative	
Dependent variables	Variable values	Categorization of original response alternatives
<i>How often do you document patient goals for the nutrition intervention?</i>	High extent vs. low extent	High extent: frequently/always Low extent: never/rarely/occasionally/not applicable
<i>When reviewing patient/patient progress, how often do you document outcomes of the nutrition intervention?</i>	High extent vs. low extent	High extent: frequently/always Low extent: never/rarely/occasionally/not applicable
Independent variables		
Demographic factors		
Country In which country do you currently live?	Sweden, Norway, Denmark	
Educational level What is the highest level of education you have completed in nutrition or dietetics?	First-cycle degree program vs. second/third-cycle degree program	First-cycle degree program: Bachelor's degree, other Second/third-cycle degree program: Master's degree or Ph.D.
Years since completed dietetic training Which year did you complete your training to be able to practice as a dietitian?	5 years More than 5 years and up to 10 years 10 years	5 years or less: 2012–2017 More than 5 years and up to 10 years: 2006–2011 10 years: 1978–2005
NCP and NCPT implementation, steps 1–4		
To what extent do you use the NCP structure in your dietetic practice for a. nutrition assessment documentation? b. nutrition diagnosis documentation? c. nutrition intervention documentation? d. monitoring and evaluation of nutrition care?	High extent vs. low extent	High extent: frequently/always Low extent: never/rarely/occasionally/not applicable
To what extent do you use the standardised NCP terminology in your dietetic practice ^a for a. nutrition assessment documentation? b. nutrition diagnosis documentation? c. nutrition intervention documentation? d. monitoring and evaluation of nutrition care?	High extent vs. low extent	High extent: frequently/always Low extent: never/rarely/occasionally/not applicable
Organisational factors		
Does your workplace expect you to document patient outcomes from the nutrition intervention?	No vs. Yes	No: no, not applicable, do not know, other Yes: yes
Area of practice		
What are your current main areas of practice? Please select all that apply.	Patient-related, inpatients, patient-related, outpatients, both inpatients and outpatients	

^aThe following information was provided next to each question: Nutrition assessment: This refers to using the standardised terms in the documentation of the collection of data and the analysis/interpretation of the collected data. Nutrition problem (nutrition diagnosis) documentation: This refers to using the standardised terms in the documentation of the nutrition problem, aetiology/cause, and signs/symptoms. Nutrition intervention documentation: This refers to using the standardised terms in the documentation of the intervention, prescription, and goals and the determining and implementing of actions. Monitoring and evaluation of nutrition care: This refers to using the standardised terms in the documentation of quality indicators, monitoring, and evaluation of the resolution of the nutrition diagnosis.

associations in the multivariable analysis (step 3 below) which could be due to multicollinearity or interactions between independent variables. Pearson's chi-squared test was conducted to examine associations between countries (Table 3).

Step 2: To avoid multicollinearity problems in the final logistic regression model, variables were tested for collinearity [37]. Spearman's correlation coefficient was computed for pairs of variables with strong correlations (>0.7). The variable with the weakest association with the

TABLE 3 Documentation of outcomes and goals, demographic factors, NCP(T) implementation, and organisational factors per country ($n = 347$)

Variables	Response categories	Sweden, <i>n</i> = 249		Norway <i>n</i> = 60		Denmark <i>n</i> = 38		Total <i>n</i> = 347		Chi-square <i>p</i> -value
		<i>N</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	
Independent variables										
Documenting patients' goals	Low	75	(30)	12	(20)	10	(26)	97	(28)	0.284
	High	174	(70)	48	(80)	28	(74)	250	(72)	
Documenting outcomes	Low	109	(44)	30	(50)	9	(24)	148	(43)	0.064
	High	139	(56)	30	(50)	29	(76)	198	(57)	
Dependent variables										
Demographic factors										
Educational level	First-cycle degree program	180	(73)	6	(10)	36	(95)	222	(64)	0.001
	Second/third-cycle degree program	67	(27)	54	(90)	2	(5)	123	(36)	
Years since completed dietetic training	5 years or less	77	(31)	24	(41)	11	(29)	112	(33)	0.282
	More than 5 years and up to 10years	57	(23)	16	(28)	11	(29)	84	(24)	
	10 years or more	115	(46)	18	(31)	16	(42)	149	(43)	
NCP implementation										
Nutrition assessment	Low	79	(32)	30	(50)	11	(30)	120	(35)	0.027
	High	168	(68)	30	(50)	25	(70)	223	(65)	
Nutrition diagnosis	Low	111	(45)	33	(55)	15	(42)	159	(46)	0.297
	High	138	(55)	27	(45)	21	(58)	186	(54)	
Nutrition intervention	Low	96	(39)	30	(50)	14	(39)	140	(41)	0.300
	High	149	(61)	30	(50)	22	(61)	201	(59)	
Nutrition monitoring and evaluation	Low	133	(54)	41	(68)	18	(50)	192	(56)	0.100
	High	113	(46)	19	(32)	18	(50)	150	(44)	
NCPT implementation										
Nutrition assessment	Low	184	(78)	45	(80)	22	(58)	251	(76)	0.021
	High	53	(22)	11	(20)	16	(42)	80	(24)	
Nutrition diagnosis	Low	115	(49)	41	(73)	18	(47)	174	(53)	0.003
	High	121	(51)	15	(27)	20	(53)	156	(47)	
Nutrition intervention	Low	184	(78)	49	(87.5)	23	(62)	256	(78)	0.016
	High	53	(22)	7	(12.5)	14	(38)	74	(22)	
Nutrition monitoring and evaluation	Low	193	(81)	49	(87.5)	26	(68)	268	(81)	0.065
	High	44	(19)	7	(12.5)	12	(32)	63	(19)	

(Continues)

TABLE 3 (Continued)

Variables	Response categories	Sweden, <i>n</i> = 249		Norway <i>n</i> = 60		Denmark <i>n</i> = 38		Total <i>n</i> = 347		Chi-square <i>p</i> -value
		<i>N</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	
Organisational factors	Workplace expectation									
	Yes	68	(27.5)	17	(29)	18	(47)	103	(30)	0.045
	No	179	(72.5)	41	(71)	20	(53)	240	(70)	
	Area of practice									
	Inpatients	104	(42)	16	(27)	20	(53)	141	(41)	0.640
	Outpatients	49	(20)	10	(17)	6	(16)	65	(19)	
	Both out- and inpatients	96	(38)	33	(56)	12	(31)	135	(40)	

dependent variable was removed, while the variable with the strongest association (highest odds ratio) was included in the final model.

Step 3: A logistic regression analysis was conducted based on variables from step 2, one for each dependent variable respectively (Table 4). Significant associations were established at $p < 0.05$.

Ethical considerations

Prior to entering the survey, participants were directed to an information page featuring a consent question [24]. Only those who answered yes to this question could enter the survey. Respondents were informed about confidentiality in the handling of data and that participation was voluntary. Internet protocol addresses were not collected to ensure respondents' anonymity. The INIS study was approved by the Ethics Review Board in Uppsala (Dnr 2016/258).

RESULTS

Description of sample

In total, 494 dietitians working in Scandinavia, Sweden ($n = 325$), Norway ($n = 88$), and Denmark ($n = 79$), responded to the survey (Figure 1). Of these, 104 (21%) did not meet the inclusion criteria of being clinically practicing dietitians working in Scandinavia ($n = 100$) with a minimum dietetic education at a bachelor's level ($n = 4$). A further 43 (9%) respondents were excluded because they had omitted the main questions of interest (the dependent variables: documentation of goals and documentation of outcomes). There were no significant differences regarding education level and years since completed dietetic training between these 43 respondents and the remaining sample. Thus, the analytical sample for the study consisted of 347 dietitians.

Demographic information for the sample is presented in Table 3. The dietitians were working in Sweden ($n = 249$, 72%), Norway ($n = 60$, 17%), and Denmark ($n = 38$, 11%). Significant differences were identified regarding education level in relation to the country the dietitians were working in ($p < 0.01$); the majority from Denmark (95%) and Sweden (73%) had completed first-cycle degree programs while nearly all respondents from Norway had completed a second/third-cycle degree program (90%). The majority worked with either only inpatients (41%) or both outpatients and inpatients (40%). Fewer worked only with outpatients (19%). Most of the respondents completed dietetic education for 10 years or more (43%) and 6–10 years (24%).

TABLE 4 Logistic regression analysis of the relationship between documentation of outcomes and goals (dependent variables) and the independent variables: demographic factors, NCPT implementation, monitoring and evaluation, and organisational factors.

Variable	Document patient goals				Document outcomes			
	<i>n</i> = 324				<i>n</i> = 323			
	Nagelkerke pseudo R^2 = 0.198				Nagelkerke pseudo R^2 = 0.332			
	Odds ratio (OR)	Lower 95% CI	Upper 95% CI	<i>p</i> -value	Odds ratio (OR)	Lower 95% CI	Upper 95% CI	<i>p</i> -value.
Demographic factors								
Education level (bachelor's degree)	0.812	0.463	1.423	0.466	1.055	0.615	1.809	0.845
Years since completed dietetic training				0.438				0.930
5 years or less (reference category)								
More than 5 years and up to 10 years	0.509	0.246	1.052	0.068	1.160	0.579	2.325	0.675
10 years or more	0.737	0.387	1.405	0.354	1.004	0.557	1.834	0.990
NCPT's 4th step (high extent)								
NCP, Nutrition Monitoring and Evaluation	2.600	1.409	4.867	0.002*	1.733	0.989	3.039	0.055
NCPT, Nutrition Monitoring and Evaluation	5.257	1.509	18.317	0.009*	3.560	1.563	8.112	0.003*
Organisational factors								
Workplace expectations	4.001	1.959	8.171	<0.001*	8.889	4.486	17.612	<0.001*
Area of practice				0.945				0.018
Both inpatients and outpatients (reference category)								
Inpatients	0.968	0.532	1.763	0.916	2.015	1.132	3.588	0.017*
Outpatients	0.920	0.439	1.930	0.826	0.959	0.471	1.955	0.909

**p* > 0.05.

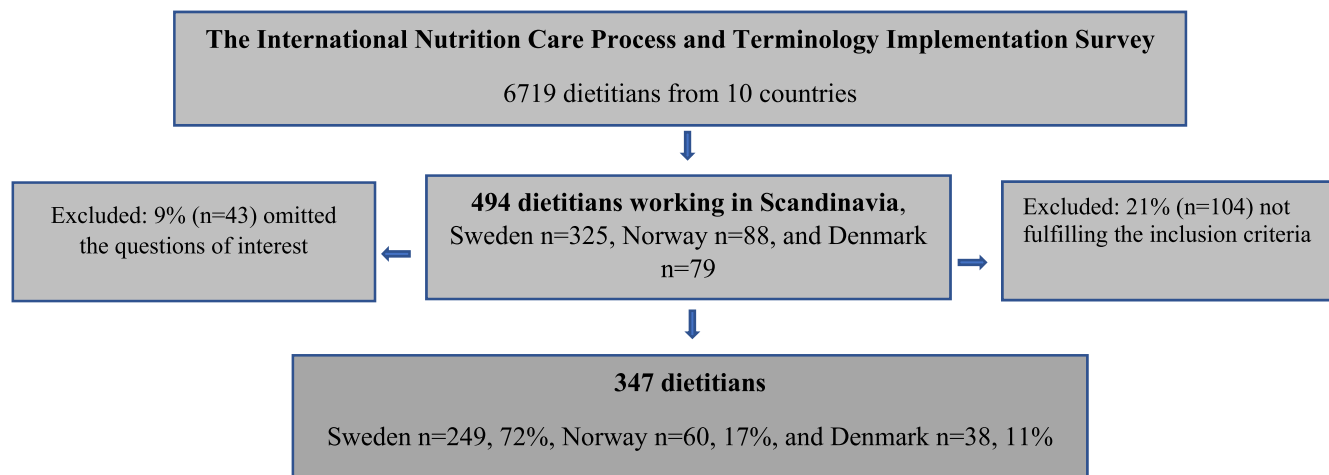


FIGURE 1 Summary of the recruitment and sampling process of responses from the Scandinavian countries from the International Nutrition Care Process and Terminology Implementation Survey in 2017.

There were significant associations between countries in the implementation of NCP's first step, Nutrition Assessment. No significant associations were found in the implementation of Nutrition Diagnosis, Nutrition Intervention, and Nutrition Monitoring and Evaluation. Significant associations were found in the implementation of the NCPT for all steps except for Nutrition Monitoring and Evaluation (Table 3).

Goals and outcomes

One-third of the dietitians reported that their workplace expected them to document patient outcomes from the nutrition intervention (30%). However, more dietitians from Denmark (47%) reported such expectations compared to Sweden (27%) and Norway (29%, $p = 0.045$). The majority of the participating dietitians reported documenting patients' goals (72%). Fewer (57%) reported documenting outcomes from the nutrition intervention (Table 3).

Variables in the final logistic model

Due to multicollinearity (Spearman's correlation >0.7) between the four steps of the NCP, only NCP's 4th step *Nutrition evaluation and monitoring* were included in the final model. This step showed the strongest association (OR = 10.28 and 4.49, respectively) with the documentation of goals and documentation of outcomes in the simple regression. To identify patterns consistently concerning the implementation of the NCP (process) and the NCPT (terminology), the implementation of the 4th step was used to represent all parts of the NCP. Correlations were

also found between educational level and country. The education level variable was included in the final model, while the country variable was removed. Interaction effects between the independent variables were examined for each of the models and no significant interactions were found.

Factors associated with the documentation of patients' goals

A higher extent of *documentation of patient goals* was associated with a higher extent of the *implementation of NCP's 4th step* (OR = 2.60; $p = 0.002$) and *its terminology* (OR = 5.26; $p = 0.009$) (Table 4). The association was stronger for the implementation of the NCP's 4th step terminology than for the process. Perceived expectations in the workplace to document outcomes were also significantly associated with a higher extent of *documentation of patients' goals* (OR = 4.0; $p < 0.001$). No significant associations were found between documentation of patients' goals and years since completed dietetic training, or area of practice.

Factors associated with the documentation of outcomes

For the dependent variable *documentation of outcomes in the nutrition intervention* (Table 4), significant associations were found for the level of implementation of NCP's 4th step terminology (OR = 3.56; $p = 0.003$), while the association for the implementation of the NCP's 4th step process was lower (OR = 1.7; $p = 0.055$). Perceived expectations in the workplace to document outcomes

were also significantly associated with a higher reported level of *documentation of outcomes* (OR = 8.89, $p < 0.001$). No significant associations regarding education level and years since completed dietetic training were shown. However, dietitians working with inpatients reported a significantly higher extent of documenting outcomes compared to dietitians working with outpatients (OR = 2.02, $p = 0.017$).

DISCUSSION

The findings highlight that the dietitians' reported documentation of goals and outcomes from nutrition intervention is highly associated with their reported implementation of NCP's 4th step and its terminology, factors associated with the workplace such as the support from the workplace, and area of practice. Factors such as years since completed dietetic training and education level did not show significant associations with the documentation of goals and outcomes.

Levels of documented goals

Previous studies have shown that goals are inadequately documented in patient records by healthcare professionals [10, 14, 15]. In an audit of dietetic notes in Sweden prior to the launch of NCP, only 9% of the notes included goals [15]. Findings in this study indicate a high level of reported documentation of goals. EHR technology has advanced [38] and the goal-setting process and dietetic documentation practices have been widely discussed by dietitians in recent years, in both research and clinical settings [6, 11, 30, 39]. Hence, the findings might reflect an improvement in the documentation of goals.

Discrepancies between actual care and documentation by healthcare professionals have been identified in several studies examining the accuracy of patient records [10, 17, 18, 40]. In a qualitative study involving healthcare professionals, feelings of inadequacy regarding psychological knowledge were described as a barrier to goal-setting, and further training was desired [41]. Training dietitians in how to discuss and identify goals collaboratively with patients and documenting these accordingly might support more accurate documentation of patient goals in the EHR [11].

A new domain has recently been added to the NCPT for the evaluation of progress towards nutrition-related goals and resolution of nutrition diagnosis [9]. The goals are evaluated through terms such as "new goal identified" or "goal achieved." These were not available when the global study was conducted in 2017. Further research is needed to explore whether these might support the documentation of goals and outcomes in nutrition care.

Levels of documented outcomes

Since the documentation of outcomes is important for enabling the evaluation of care and promoting patient-safe care [13, 29, 33], these should be documented in all cases. However, in line with our findings, the documentation of outcomes has been shown to be lacking in nutrition care [10, 13, 14, 30]. Some respondents may not conduct follow-ups with patients and therefore reported documenting outcomes to a lower extent. The launch and implementation of NCP and NCPT in Scandinavian countries have initially focused on Nutrition Diagnosis and less on Nutrition Monitoring and Evaluation [24], which may also explain our findings.

Nutritional support plays a multifunctional role in a patient's life [7] and may affect a wide range of outcomes [6, 10]. Some outcomes can be measured by healthcare professionals while others can only be estimated by the patient, for example, well-being and quality of life [42]. Patient-reported outcomes have been shown to be less frequently documented compared to other outcomes in health care [13, 16, 43]. In nursing care, the Nursing Outcome Classification (NOC) is seen as an important tool for the evaluation of nursing interventions [12, 42]. The NOC has been shown to have high applicability in the assessment of clinical progress, even for patients with complex conditions [12, 42]. The NOC enables the measurement of patient-reported outcome measures independently by the patient, as well as outcomes that require the expertise of professionals [12, 42]. The NCP comprises a diversity of tools that can be used for the evaluation of outcomes [9]; however, patient-reported outcomes of nutrition interventions are currently difficult to measure. The lack of tools enabling the measurement of these has been discussed as a barrier to the documentation and evaluation of care [10, 13].

The NCPT includes a variety of terms covering patients' well-being and quality of life and may support dietitians in documenting these outcomes [9]. However, in a focus group study, Swedish dietitians described a tendency to associate the NCPT with quantitative outcomes, such as weight or anthropometrics, rather than terms concerning patient-reported outcomes [44]. Allowing for the inclusion of patient-reported outcomes in the NCPT might be one way to increase documentation of outcomes from nutrition interventions.

The implementation of Nutrition Monitoring and Evaluation

In the present study, few respondents reported having implemented the NCPT; this was strongly associated with a higher level of documentation of patients' goals and outcomes. The association was stronger (i.e., higher odds

ratio) for the implementation of the terminology compared to the implementation of the NCP 4th step process. Respondents who reported implementing the terminology might view documentation as an important aspect of care [45] and therefore reported documenting goals and outcomes to a greater extent. Several studies have shown that standardisation can be used as a strategy to improve documentation [10, 21]. This supports the association between NCPT implementation and the documentation of patients' goals and outcomes identified in this study.

However, concerns have been raised that standardisation might limit the documentation since patients' complex needs, goals and outcomes cannot always be sufficiently reflected in standardised terms [44]. According to an audit of clinician notes in cancer care, goals related to function, comfort, and quality of life were more frequently documented when templated notes were used [46]. However, emotional and spiritual needs are often missing [16], although more frequently documented in unstructured notes. Hence, a balance between the use of standardised terminology and flexible documentation or the incorporation of emotional and spiritual needs in the templates may support more comprehensive documentation [47].

Documentation of outcomes was reported by 57% and of goals by 72% of respondents while implementation of the NCP's 4th step terminology was only reported by 19%. This might indicate that standardisation is not the only key to systematic documentation of goals and outcomes. Around 20% of the variation in the documentation of goals was explained by the variables in the model ($R^2 = 0.198$); there might, therefore, be other important variables that were not included in the model. Regarding the documentation of outcomes, as much as 33% was explained by the variables in the model ($R^2 = 0.332$). Those who reported documenting patients' goals and outcomes but not using the NCP and NCPT might have other strategies that support documentation practice. For example, the use of EHR has been shown to facilitate documentation and promote a goal-oriented approach in health care [48]. Further research is needed to explore whether the use of the NCPT also supports good quality and comprehensive documentation of goals and outcomes. An EHR audit study focusing on the documentation of goals and outcomes would provide a better picture of these associations.

Factors associated with the workplace

The dietitians who reported being expected to document outcomes in their workplace were more likely to report documenting patients' goals and outcomes. Managerial

support is an important aspect of documentation practice [19, 21]. However, some healthcare managers might not be aware of the necessity of investing in resources to enhance the quality of documentation [49]. Workplaces that provide EHR education and allow time for documentation might support good quality documentation by healthcare professionals [49]. Education targeting healthcare managers concerning strategies to enhance documentation practice among healthcare professionals is one way of enhancing the quality of care [49].

Peer support and culture are other aspects highlighted as important for documentation practice [50]. In a qualitative study, primary care dietitians described lacking peer support and a network [50]. Their documentation in patients' records was described as being less comprehensive. While dietitians in hospital settings might work with both in- and outpatients, respondents working with inpatients reported documenting patients' outcomes to a higher extent than those working with outpatients. Many hospital settings might provide a culture and a structure for the development of dietitians' documentation practices that smaller primary care centers may not have the resources for [50].

The dietitians in the present study might not have the required resources, EHR systems, and structures supporting the use of NCPT, or organisational support to implement standardised terms in the documentation [51]. Considering the associations identified in this study, providing dietitians with resources in the workplace that support the documentation of goals and outcomes might be key for improving outcome evaluation and quality in nutrition care.

Individual factors

Since the implementation of NCPT over the past decades in Scandinavia, dietitians with shorter working experience may have had more training in using the standardised terminology in their dietetic education compared to dietitians who graduated longer ago [24]. However, no association between years since completed dietetic training and the reported extent of documentation of goals and outcomes was detected in this study. Those with second/third-cycle degrees did not report a higher extent of documentation of goals and outcomes.

While dietetic education in Sweden and Denmark is at the bachelor's degree level, dietetic education in Norway is at the master's degree level. Dietitians who have completed their education more recently are more likely to have completed a second/third-cycle degree program and had more training in NCP and its terminology compared to those who completed their education earlier [24]. These

confounders make it difficult to conclude regarding education level and documentation practice; findings show that factors connected to the workplace and implementation of NCPT are more likely to be associated with the documentation of goals and outcomes. Individual factors, such as attitudes towards NCPT and perceived benefits of its use, have been emphasised as important aspects for NCPT implementation [45]. Since the implementation of NCPT was strongly associated with the documentation of goals and outcomes, education about its benefits and strategies to facilitate its use according to dietitians' needs might improve the documentation of goals and outcomes.

Implications for improving the quality of the documentation

The use of a nutrition-specific standardised language has been highlighted in many studies as important for enhancing the documentation of nutrition interventions [10, 21, 52]. Given the low implementation level of NCPT and the clear association between NCPT implementation and documentation of goals and outcomes, we emphasise the need to facilitate the use of NCPT in line with dietitians' clinical practice. Integrating the NCPT into the EHR has been shown to facilitate the documentation structure [10]. More research is needed to explore the different types of EHR used in inpatient and outpatient clinics, and how these might impact the documentation process. Future studies will indicate whether the documentation of goals and outcomes improves with new strategies to support the use of NCPT.

Integrating a variety of tools in the EHR or related health informatics systems and allowing the patient to insert their own data may support the documentation of patient-reported outcomes, which in turn promotes comprehensive outcome evaluations. Applying user-centered design in the EHR, emphasising the patients' goals, is another way of supporting good quality documentation [53].

However, implementing good quality documentation requires resources and tools [54]. In line with our findings, managerial support seems to be crucial for the documentation practice [19, 21, 55]. Implementing strategies that support healthcare professionals' documentation of goals and outcomes at an organisational level is necessary to promote accurate documentation and outcome evaluation.

Methodological considerations

The results are based on self-reports and do not represent the dietitian's actual documentation practice. The

response rate was low (494 out of around 2700 dietitians in Scandinavia) and Swedish dietitians were overrepresented, which may affect the results. The sample size is, however, adequate to perform a regression analysis, with over ten events per explanatory variable and a relatively large total sample size [37]. Since this examination was of an exploratory nature, no adjustment has been made for multiple testing.

This study might have attracted those who are interested in standardised working processes and documentation, which may explain findings. Discrepancies between reported documentation and actual practice have been identified in many previous studies [10, 15, 17, 18]. Findings might, therefore, reflect overreporting. Other factors, such as time, technical issues, knowledge, and motivation, have been associated with documentation practice but these have not been addressed in this study [1, 20, 27]. Further research is needed to explore whether these factors are associated with the documentation of goals and outcomes. This cross-sectional study gives a limited picture of dietitians' documentation practice concerning goals and outcomes. It also provides insight into factors of importance for the development of dietetic documentation in Scandinavia and gives direction for future research.

CONCLUSION

Findings highlight strong associations between the implementation of NCP's 4th step terminology and the documentation of goals and outcomes, indicating that standardisation might support the documentation process. The provision of education to healthcare managers and dietitians about how standardised terminology can be used and how it can contribute to good quality documentation is warranted. Strategies to support dietitians in using standardised terminology and the development of tools for comprehensive documentation of evaluation of goals and outcomes are required.

AUTHOR CONTRIBUTIONS

Elin Lövestam, Ylva Orrevall, Anne-Marie Boström, Nanna R Lang, Lene Thoresen, and Charlotte Peersen designed the study and developed the INIS tool. Elin Lövestam was responsible for the data collection with assistance from YO, AMB, NRL, LT, and CP. Inger Persson was responsible for the selection of appropriate statistical analysis methods. Lina Al-Adili was responsible for the data analysis. All authors participated in the analysis and interpretation of the data. Lina Al-Adili was responsible for drafting the manuscript; all authors contributed with critical revisions and supervision.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

ETHICAL APPROVAL

The INIS study was approved by the ethics review board in Uppsala (Dnr 2016/258).

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