

Electronic nursing documentation in primary health care

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The aim of this study was to describe and analyse nursing documentation based on an electronic patient record (EPR) system in primary health care (PHC) with emphasis on the nurses' opinions and what, according to the nursing process and the use of the keywords, the nurses documented. The study was performed in one county council in the south of Sweden and included 42 Primary Health Care Centres (PHCC). It consisted of a survey, an audit of nursing records with the Cat-ch-Ing instrument and calculation of frequencies of keywords used during a 1-year period. For the survey, district nurses received a postal questionnaire. The results from the survey indicated an overall positive tendency concerning the district nurses' opinions on documentation. Lack of in-service training in nursing documentation was noted and requested from the district

nurses. All three parts of the study showed that the keywords nursing interventions and status were frequently used while nursing diagnosis and goal were infrequent. From the audit, it was noted that medical status and interventions appeared more often than nursing status. The study demonstrated limitations in the nursing documentation that inhibited the possibility of using it to evaluate the care given. In order to develop the nursing documentation, there is a need for support and education to strengthen the district nurses' professional identity. Involvement from the heads of the PHCC and the manufacturers of the EPR system is necessary, in cooperation with the district nurses, to render the nursing documentation suitable for future use in the evaluation and development of care.

Keywords: district nurse, documentation, electronic patient record, nursing process, audit, primary health care.

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Introduction

The documentation of care is a legal issue in Sweden (1). With the purpose of supporting documentation, clinical decisions and the evaluation of care, an electronic patient record system (EPR) was introduced into primary health care (PHC) at the beginning of the 1990s (2, 3). The introduction of the EPR increased the demands made on the quality and structure of the nursing record in PHC (4, 5).

Nurses in primary health care

In Sweden, nurses in PHC with a specialist training have the professional title district nurse. The district nurse's workplace is usually at a Primary Health Care Centre

(PHCC) where she/he cooperates with other caregivers, such as general practitioners, physiotherapists, occupational therapists etc. Together these team members constitute the first-line of health care external to that given at the hospitals and they are accessible to people with all kinds of health problems (6). The head of the centre was when this study was performed almost always a physician who had the overall management responsibility. A comprehensive view, a coordinating role and independent judgement characterize the work of the district nurse (6–8). Easily accessible information is thus necessary to ensure good and safe care of the patient (1, 6).

Documentation of nursing care

The Swedish Patient Record Act (1) has been in effect since 1986 and regulates that the reason for giving care, the judgements made, interventions administered and the outcome of care should be documented for the safety of the patient and the possibility of evaluating the care. Nursing is, legally, equivalent to medical care (9).

Traditionally, nurses had norms that favoured communication of the mundane and they used a redundant

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form of language, which obstructed a more precise documentation (10–13). This became an obstacle when the Swedish Patient Record Act took effect and the nurses had to keep records. In several studies (13–15), it is noted that nurses reported more than they documented. The nurses had complaints about lack of knowledge, time and a uniformly written nursing language (12, 16–18). Through documentation, the act of nursing became visible, which was both pleasant and frightening for the nurses (10, 12, 17). To support the development of nursing documentation in Sweden, the VIPS model was created in 1992 (16, 19). VIPS is an acronym for the Swedish words for Well-being, Integrity, Prevention and Security (16, 19). The VIPS model consists of keywords that are systematically organized from the nursing process, see Fig. 1 (4, 19, 20).

In the VIPS model, the keywords are arranged in two levels. The first level of keywords corresponds to the steps in the nursing process, see Fig. 1. The second level of keywords exists only for the keywords nursing history, nursing status, and nursing intervention and covered the areas included (21–23). At three national conferences in 1994, 514 (71%) of nurses claimed that they were using the model and the VIPS model was used in (86%) of the nursing schools in Sweden in 1994 within education in nursing documentation (23). Later studies indicate that, while the nursing record had become more comprehensive, it still did not fulfil the recommendation of Swedish Patient Record Act, or was it complete according to the nursing process (24, 25). It has been pointed out that nurses document medical/objective status and care performance based on medical treatment well but seldom describe subjective status or use the keywords for nursing diagnosis or nursing outcome (24, 25).

The development of nursing documentation in PHC has progressed from few words, handwritten notes to an EPR

with the structure of the nursing process (18). For the district nurse, the documentation of care in EPR involved new knowledge of the nursing process, documentation and new technology in order to handle a computer. Few studies, either before or after the introduction of the EPR, have investigated the effect and experience of nursing documentation in PHC. Furthermore, these studies focused principally on documentation related to specific health problems (26, 27). The aim of the present study was to describe and analyse nursing documentation in EPRs in PHC. The emphasis concerned the nurses' experiences and what, according to the nursing process and the use of the key words, they documented.

Methods and material

The study consisted of three parts; a survey, an audit of nursing records and calculation of the frequency of the keywords used.

Sample for the survey

In the survey part of the study, district nurses from one county council in the south of Sweden were invited to participate. A 50% stratified random selection was made from all district nurses in the county ($N = 424$). The selection was performed to ensure that each of the 42 PHCCs was represented. The study population thus comprised 212 district nurses.

A postal questionnaire was sent during the winter 2002/2003 to the sample. After two reminders, 154 district nurses had answered which gave a response rate of 73%. At least one district nurse from each PHCC answered.

The district nurses had a median age of 51 years (range: 27–62) and they spent an average 80 minutes/day (range: 20–300) on documentation. Characteristics of the district nurses, such as number of years in the occupation and at their work place, specialist training and education in documentation, nursing process and handling a computer are shown in Table 1.

The majority of the district nurses had been working for more than 5 years in PHC and more than half of them had received education in nursing documentation and how to handle a computer.

The instrument for the survey

The questionnaire consisted of 45 questions in total and was developed for this study. The first 22 questions covered individual characteristics like age, education, professional experience and working situation. These background details are reported in Table 1. Three questions followed concerning estimated knowledge regarding documentation, the nursing process and handling a

<i>Nursing process</i>	<i>Key word on first level in the VIPS model</i>
Assessment	Nursing history Nursing status
Analysis	Nursing diagnosis Nursing goal
Planning	Planned nursing intervention
Implementation	Implemented nursing intervention
Evaluation	Nursing outcome Nursing message Discharge note

Figure 1 Correspondence between the nursing process and the VIPS-model.

Table 1 Individual characteristics of the district nurses

Variable	Number [n = 154 (%)]
Years spent in primary care (>5 years)	117 (76)
Years spent at present workplace (>5 years)	87 (57)
Degree of full-time work	74 (48)
Speciality training	
As district nurse	127 (83)
As district nurse after 1986	86 (69)
Education in	
Nursing documentation	88 (57)
Nursing process	71 (46)
Handling a computer	86 (69)

computer, three questions concerning in-service training, 12 questions dealt with the keywords and one question dealt with the opinions of documentation. The questionnaire was completed with four open-ended questions about documentation in EPR and the structure for documentation used. One of the questions about the keywords asked the district nurses to estimate use of the keywords on the first level. This question had the response alternatives: always, when necessary to update, first occasion of care, seldom or never. The question designed to capture the district nurses' opinions on documentation was formulated with 14 statements. This question had a 5-point rating scale, which ranged from 'totally agree' to 'do not agree at all'. The statements were based on earlier studies (28–30). For all the questions, except the background facts there was the possibility of making comments.

The questionnaire was developed in cooperation with a reference group of six key people. The key people had long experience and/or a special interest in nursing documentation. A pilot test was performed that did not result in any changes.

Sample for the audit of nursing records

All the 42 PHCCs received written information and were asked to send copies, for audit, of nursing records kept by each of two district nurses, one with specialist training before 1986 and the other one after. The minimum documentation the record should have included was from the first, second and latest time the patient visited, or was visited by the district nurse, for the same medical reason. Thirty-six PHCCs agreed to participate. Eight PHCCs had only district nurses with special training after 1986 and five sent only copies of one record, kept by a district nurse with specialist training before 1986. Nine of the 36 PHCCs later declined to participate because of high workload. After three reminders five PHCCs had not answered and one had a computer program that made it difficult to render the patient anonymous.

A total of 41 nursing records from 27 PHCCs were audited, 19 kept by district nurses with specialist training before 1986 and 22 by those with specialist training after 1986.

Instrument for the audit of nursing records

The audit of the nursing records was carried out by the instrument Cat-ch-Ing (31, 32). This instrument was developed to measure, quantitatively and qualitatively, how the different steps of the nursing process, using the VIPS model and Swedish laws as a basis, are documented. The quantitative aspects indicate the compliance to the keywords and the qualitative aspects judge linguistic correctness in the notes. Points are awarded from 0 (missing/poor) to 3 (complete/very good) for both the quantitative and qualitative aspects. The Cat-ch-Ing audit instrument also assesses if a responsible nurse has been named, the adequacy of the use of the keywords, if the notes are dated, signed, clarification of signature is present and legibility. In this study, the audit of the discharge notes was excluded since these notes were not asked for when requesting copies of the nursing records. The part of the instrument that judges a date, signatures, clarifications of signatures and legibility was excluded since these items are automatically completed using the EPR.

The inter-rate reliability for the instrument was 0.92–0.98 when different nurses audited a total of 310 patient records from surgery, neurological and rehabilitation wards in two Swedish studies. The content validity ratio was judged by a panel of 10 experts to be 0.6–0.8 for the items used in this study and criterion validity showed a correlation rate of 0.68 between Cat-ch-Ing and the Ehnfors instrument, which measures the use of the nursing process in documentation and has been used in several Swedish studies (21, 31–33).

Sample for calculating the keywords

In connection with the introduction of the EPR, 31 of the 42 PHCCs had created similar standard structures for documentation. The structure was influenced by the nursing process and VIPS with keywords on two levels. This group of PHCCs was requested to calculate the frequency of keywords used during 2002 and 15 PHCCs agreed to participate. The most usual reason for declining was that the counting was a time-consuming process, despite the EPR.

Data analysis

The data from the survey were treated confidentially and were registered in STATVIEW software package. For group comparisons, the Mann–Whitney nonparametric test was

used. Statistical significance was defined as being reached at $p < 0.05$ (34).

The identification of patients, nurses and primary care centres in the patient records was removed before the copies were sent to the author. One of the authors (ET) carried out the audit after discussion of what should be excluded and interaction with the other authors regarding local policies. The audit was repeated twice, with an interval of 1 month.

Before the data collection was commenced, all the heads of the PHCCs were informed verbally.

The study was approved by the local Ethics Committee at Linköping's University Hospital.

Results

The survey part of the study

The reported estimation of district nurses' knowledge of handling a computer and nursing documentation was higher than the estimation of knowledge of the nursing process (Fig. 2).

The estimated knowledge of the nursing process was higher for district nurses with special training after 1986 than for those with training before 1986 ($p < 0.01$). Those district nurses who had received education in documentation estimated their knowledge in this area to be significantly higher than those who had not undergone such education ($p < 0.01$). Even those who had education in handling a computer estimated their knowledge in documentation to be higher than those who had not ($p < 0.05$). Apprehended knowledge of nursing documentation corresponded either to the date of specialist training or to age.

In-service training in documentation was reported from 69 (45%) of the district nurses and the frequency for training varied from once a week for seven district nurses, once a month for nine, every 6 months for 14 to once a year for 30 of the 69 district nurses. For nine nurses, the

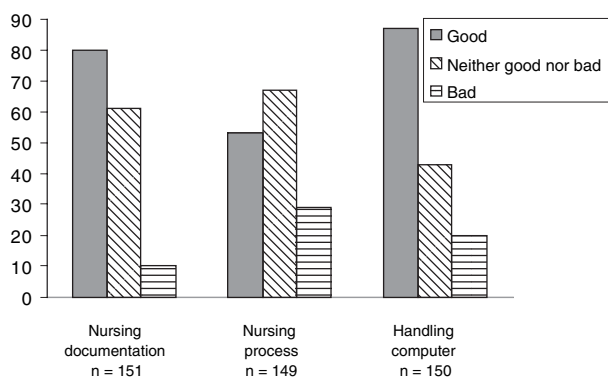


Figure 2 District nurses' estimations of their knowledge of nursing documentation, the nursing process and handling a computer.

answers about frequency were missing. On the training occasions, the district nurses discussed how to ensure that documentation was performed in a uniform way and new aspects of the system for EPR. There was no significant difference in estimated knowledge of documentation between district nurses who had in-service training and those who had not.

Usual comments to the questions about in-service training were:

'We need to meet together to develop the documentation but we have no time for that'.

'The occasions for in-service training in documentation are not planned, they are held when the need occurs. The latest occasion was 1 year ago'.

The answers to the question dealing with district nurses' opinions on documentation showed an overall positive tendency (Table 2).

The most positive statement was that the district nurses provide higher security for the patient. The least positive statement was that district nurses had an undisturbed environment when documenting (Table 2).

Comments by district nurses about documentation were:

'More structured documentation elicits clearer thoughts and stimulates reflection'.

'Nursing documentation must be more highly valued. Today it is carried out during time left over and I think nobody pays it any attention'.

The results of estimated use of keywords showed that nursing intervention and nursing status were most used while there was little use of the keywords nursing diagnosis, outcome and discharge notes. The keyword goal was not possible to measure in the survey (Table 3).

Some comments illustrate the influence from some general practitioners recommended the use of few keywords and that keywords should be chosen according to the medical record, in order to make the nursing documentation easy to use.

Audit of nursing records

In the results of the audit with the Cat-ch-Ing instrument, the keywords nursing intervention, nursing outcome and nursing status received the highest score. The keywords nursing goal and nursing diagnosis received the lowest scores (Table 4).

There was no record that received full points when audited. The district nurses with specialist training before 1986 had a tendency to reach a higher score.

Notes of outcome were not found under the keyword nursing outcome but were documented as an updated status. Information about the patient's status was found in 30% of the notes under the keyword nursing intervention. All notes contained medical details and medical-based treatment, including prescribed medicines. Notes of nursing, for example, the comprehensive

Statement (n = 145)	Mean ± SD
Documentation provides higher security (for the patient)	1.30 ± 0.55
Documentation provides clarification concerning the implemented nursing interventions	1.35 ± 0.57
Documentation increases the quality of reporting to other caregivers	1.35 ± 0.58
Documentation describes the work I do	1.39 ± 0.59
Documentation facilitates my judgement of the patient's current status	1.42 ± 0.51
Documentation facilitates evaluation of nursing care	1.56 ± 0.67
Documentation makes it easier to find the nursing interventions planned for the patient	1.75 ± 0.78
Documentation clarifies the patient's nursing history	1.82 ± 0.64
I am satisfied with my own documentation in the patient records	2.12 ± 0.64
Time for documentation is included in the work of caring for the patient	2.15 ± 1.08
I feel that it is easy to know what I should write in the record	2.19 ± 0.80
Documentation facilitates the organization of my work	2.22 ± 0.95
The heads of the Primary Health Care Centre support and encourage nursing documentation	2.47 ± 1.03
I have access to an undisturbed working environment when documenting	2.50 ± 1.17

Score range from 1 to 5, low score is positive.

Table 3 District nurses' estimated use of keywords on the first level (n = 136)

Keywords of first level	Number
Nursing intervention	130
Nursing status	113
Nursing history	75
Nursing diagnosis	37
Nursing outcome	35
Nursing discharge	22

Table 4 Results from the audit of records using the Cat-ch-Ing instrument

Keywords	Quantitative (n = 39) [mean (SD)]	Qualitative (n = 39) [mean (SD)]
Nursing intervention	1.1 (0.3)	1.3 (0.4)
Nursing outcome	1.1 (0.7)	1.3 (0.7)
Nursing status	1.0 (0.5)	1.3 (0.5)
Nursing history	0.8 (0.6)	1.0 (0.8)
Nursing diagnosis	0 (0.0)	0 (0.0)
Nursing goal	0.05 (0.3)	0.05 (0.4)

Score range from 0 to 3, high score more complete/better.

view of the disease's effect on the individual occurred rarely.

The language of the district nurses in the audit was a professional language, containing facts but in telegraphic style, sometimes too brief to understand. The name of the responsible district nurse was not noted and abbreviations of names of caregivers in the text of patient records were not always explained.

Table 2 District nurses' opinions on documentation

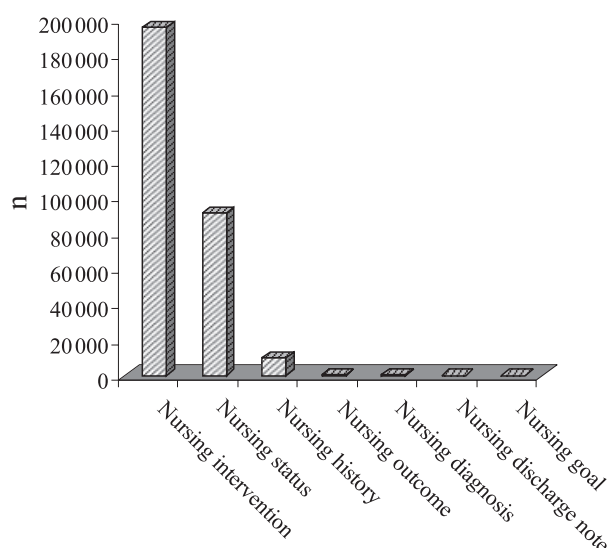


Figure 3 Keyword frequencies at 15 Primary Health Care Centres during 2002.

Keyword frequencies

Keywords for nursing intervention and status were the most frequently used, as shown in Fig. 3, while nursing diagnosis, goals and discharge notes hardly existed in the nursing records.

Discussion

There are two results that are highly important to discuss and those are the content of the nursing record and the district nurses' experiences of documentation. The survey, the audit and the calculation of keyword frequencies gave

a unanimous picture of the documentation. The district nurses' used the keywords nursing status and nursing intervention frequently, nursing history less frequently and nursing diagnosis, nursing goal and nursing outcome rarely. There was a predominance of documentation of medical/objective status rather than nursing status. These results implied that the documentation performed by the district nurses in this study document conforms to that of nurses in earlier studies (21, 24, 35–37) and consolidates the observation that, nearly 20 years after the Swedish Patient Record Act took effect, nursing documentation is still on a basic level and there are too many important parts missing to allow the use of the documentation for any other purpose than as a logbook.

On the contrary, the district nurses felt that the structured form for the nursing record facilitated documentation, clinical decisions and evaluation of the care. The majority of the district nurses stated that they had no difficulty knowing how to write in the patient records. When comparing the results from the audit with the district nurses' experience, the contradiction is obvious as the results of the audit revealed deficiencies that inhibited clinical decision-making and evaluation of the care.

Several reasons may explain this. First, the way the introduction of the EPR was performed. For most of the district nurses, the introduction of the EPR involved three new areas to learn and understand simultaneously, the nursing process, the structural form for documentation, and how to handle a computer (4). The feeling of satisfaction could be derived from the sense of conquer, the acquirement of a skill, i.e. being able to control the new technology and document more comprehensively than before. Maybe the skill of documenting nursing had, however, been pushed into the background by the nurses having to learn how to handle the computer instead of having the previous possibility of concentrating on and developing the nursing record. If the frequency of in-service training measures the follow-up activities, they are insignificant. The PHCCs have a reputation of being incomplete arenas for education and development (38), which can explain this observation.

Secondly, the EPR used in the areas studied did not give the general view desirable from a nursing aspect; the medical diagnosis and treatment dominated instead. The EPR is common for all caregivers in the PHCC, which makes it possible to see collaborative caregivers' notes. Perhaps this circumstance seemed to make the documentation under the keywords nursing history and nursing status incomplete. History and actual status for the patient could be documented by some other caregiver at the PHCC. Repeated documentation was not necessary but the details should have been more clearly presented. The structure for documentation used by 31 of the 42 PHCCs could also be responsible, with its medical-based keywords especially for nursing intervention. Ruland (2) pointed out

that the EPR system was developed by the heads of the PHCCs and software suppliers demands, as although the nurses did not have enough knowledge to be able to influence the development. The PHCC's studied most commonly had a physician as head at the time of introduction of the EPR, which may have meant that the inclusion of the district nurses' perspective was not possible.

Thirdly, the role the district nurses in Swedish PHC could both facilitate and inhibit nursing documentation. The district nurse makes independent judgements regarding treatment, even prescribes, and there is an increased demand for qualified medical care as a result of fewer beds at the hospital and a growing elderly population (8, 26), which may lead to nursing care being taken for granted by the district nurse and thus underestimated in relation to medical care (13–15, 36). However, the attribute of the district nurse's working role as a coordinator, with a comprehensive view of the patient's life situation should encourage her/him to describe the patient's situation as she/he perceives it.

Fourthly, the resistance to the district nurses' documentation from the general practitioners, who found the nursing documentation too extensive and difficult to obtain information from, could influence the documentation of nursing care negatively. But if one reflects over the mantra 'If it was not documented, it was not done' a great part of the district nurses' work does not exist (39).

As the study used the nursing process (20) and the Swedish laws (1, 9) as criteria to assess the documentation and the documentation studied was influenced by the VIPS model, the authors found the valid Cat-ch-Ing instrument useful even in PHC. Another reason to choose Cat-ch-Ing was the opportunity of assessing the quality aspect in the records as well as investigating if the language was an inhibitor of documentation, as reported in earlier studies (12, 13). This study did not clarify whether the district nurses experience the language as an obstacle. The language in the records was too brief to allow a relevant assessment. The EPR was expected to facilitate the collection of records and the calculation of keywords but there were technical difficulties in searching for patients who had visited the nurses on a particular day and the calculation reduced the capacity of the data system, which was not possible to run during working time. The year 1986 was chosen bearing in mind the date for the introduction of the Swedish Patient Record Act (1) and thus the change in nursing records education that it might have brought about (18). In this study, the education in nursing documentation in the basic and specialist training was not enough to make any difference to the documentation.

For PHC, there are few national registers (40) of the results of care, which made documentation in the patient records an even more important instrument for evaluation and revision of interventions. This makes the development

of nursing documentation necessary and further research is required to investigate the relationship between the content of the documentation performed by the district nurses and their experiences of it and how to deal with it.

Conclusion

The district nurses found several advantages of structured documentation. There is, however, a need for support and education of the district nurses, to strengthen their nursing identity and the value of a wider use of documentation. This could lead to a predominance of documentation of nursing facts instead of medical care. The involvement of the heads of the PHCCs and the manufacturers of the EPR is necessary, so that they can develop the nursing documentation in cooperation with the district nurses, thus rendering it suitable, according to Swedish regulations, for use in the development of care.

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Author contribution

Eva Törnvall took part in the study design, development of the questionnaire, adjustment of audit instrument, data collection, data analysis, drafting of manuscript and writing.

Susan Wilhelmsson participated in the study design, development of the questionnaire, adjustment of audit instrument, data analysis, statistical analysis, critical revisions of manuscript.

Lis Karin Wahren was involved in adjustment of audit instrument, data analysis, critical revisions of manuscript.

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Ethical approval

Approved by the local Ethics Committee at Linköping's University Hospital (Dnr 03-240).

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