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Medication Counseling: Analysis of Electronic Documentation Using the Clinical Care Classification System

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Abstract

Medication counseling is a central aspect of medication safety. Counseling refers to the process of informing, advising and administering medication to help patients manage their medication regimen. This pilot study examined 379 descriptions of medication counseling carried out in surgical care and documented in an electronic patient record system by using the Clinical Care Classification System. The objective was to identify counseling methods and to evaluate the need for additional counseling descriptor codes in the record. Eleven counseling methods were identified and the data were classified according to counseling methods with and without documentation of the nature of the interaction with patients. There were no descriptions of the nature of counseling conducted in 127 of the documented entries. These results can be used when developing the documentation of medication care in electronic patient records.

Keywords:

Medication administration, Patient safety, Counseling, Terminology

Introduction

The purpose of medication counseling is to support medication care by educating patients about their health status and medications needed to support it. This education during hospitalization results in the improvement of their knowledge regarding medications [1], increases their participation in care and enhances medication adherence [2].

Studies detailing the methods used in medication counseling are numerous. However, there is variability of study results based on methods used and outcomes measured in daily practice [1,3]. Standardized classifications can provide needed structure to organize the documentation and analysis of nursing care in a more systematic manner [4]. Structured descriptions of interventions used in an electronic patient record can be analyzed and evidence about safety, quality and use of resources evaluated [5, 6].

Most electronic systems that use structured data entry also allow supplemental information to be entered into the system in a narrative text format. Analyzing both the use of the structured codes and narrative text allows for the determination of potential additional structured codes that could further enhance the extraction and analysis of data [7]. In a study of narrative documentation in an otherwise structured clinical information system, Moss et al. found that almost 75% of the documented entries did not have a structured code in the system, increasing the time and effort needed to analysis these entries [7]. However, it has been shown that structured nursing terminologies, such as the Clinical Care Classification System, can be successfully used to classify nursing documentation in a structured format [8].

The purpose of this paper is to describe the evaluation of structured (using a nursing classification) and unstructured (supplemented free text) documentation of medication counseling in surgical care to determine methods used in counseling and how the narrative documentation in the record might inform additional coding for structured electronic documentation in the future.

Background

Finnish Classification of Nursing Interventions

The Finnish Classification of Nursing Interventions (FiCNI) has been implemented in electronic health record systems in Finland and is used in nursing care planning and documentation. Primarily, nurses use this portion of the electronic record, however all health professions can also access and document interventions carried out on patients. FiCNI is effectively a cultural revision of the Clinical Care Classification System (formerly the Home Health Care Classification) [9]. This standardized terminology consists of 19 care components, 164 main categories and 266 subcategories and is used to define planned and performed nursing actions. The *Medication component (G)* is divided into three main categories: *G.1 Medication Administration, G.2. Medication Side Effects and G.3 Medication Counseling*. In electronic health record systems documentation using intervention codes in these categories can be supplemented with free text narrative information. [9,10] According to a study focusing on the analysis of FiCNI use in nursing documentation in surgical and internal care the Medication component was one of the three most frequently used tools in documenting care provided [11]. In an other study assessing how the Medication component and its categories were used in daily documentation (N=4,594), 70 % of nursing actions

were found to be focused on medication administration and the single subcategory medication administration 'per os' was used most often [12].

Medication Counseling

Medication counseling is a central part of medication safety. Counseling refers to the process of informing, advising and administering medication to help patients in their medication regimen. [13] The objective of counseling is to promote its rational use to insure the best therapeutic action of the medication [1, 3]. Several studies show that lack of information causes patient non-adherence towards medication care regimen [1-3]. Kerzman and her associates (2005) found out that counseling was an important factor affecting correct knowledge about medication therapy at discharge. They also emphasize the importance of assessing a patient's cognitive abilities and highlight the provision of written material after counseling to reinforce the counseling success. [1]

In a previous study, five areas of teaching interventions related to medication management were found to be documented in the patient records in general medical ward: information, motivating conversations, explanations, instructions and setting expectations. According to the results documentation of patient teaching was inadequate. Although 80 % of patient records contained details of pedagogical relevance, they were not documented in a structured way and the use of terms and expressions were fragmented. [3]

The timing of counseling is extremely relevant for insuring correct knowledge regarding medication therapy. Counseling during hospitalization appears to help the patient better comprehend the information given and to ask for additional information. [1] Counseling is also needed when a medication care regimen changes. For instance new dosing and timing may cause adverse events in medication therapy if the new instructions are not given to and understood by patients. [1, 13-14]

Overall electronic information systems have been shown to reduce the number of medication errors associated with order entry [15-16]. Perhaps using standardized electronic documentation codes for medication counselling will help prompt caregivers to provide more complete and effective medication counselling to reduce errors and enhance therapeutic efficacy.

Purpose and aims

The purpose of this paper is to describe the evaluation of structured and unstructured documentation of medication counseling in surgical care to determine methods used in counseling and how they might be coded for structured electronic documentation.

Research questions in this study included:

- What are the methods used in medication counseling?
- How often is medication counseling provided to patients?
- Who provides medication counseling to patients?

Methods

De-identified patient data were extracted from the electronic patient records of a central hospital in Finland during 2004-2005. Before this analysis the FiCNI classification had been in use for two years in the electronic patient record system. The analysis was restricted to 11,543 patient records from a surgical ward in the year 2004. The Medication component as a code was used at least once in 3,902 (33.8%) of these records. For this pilot study the use of category *Medication counseling* of the FiCNI Medication component in the surgical ward documentation was analyzed. The code of medication counseling was used to describe nursing interventions in 379 records. These records included documentation entries of medication counselling in 269 patients, some of which had multiple admissions to the hospital that year.

Each record consisted of the following items: de-identified patient number, date and time of documentation entries, title of the personnel documenting, the heading and medication counseling category (G 3) with supplementing narrative text for each documentation entry. The data were extracted using SQL queries then converted to MS Access to process the raw data for research purposes. The data were analysed using MS Excel and further with SPSS 14.0 for Windows for descriptive statistics. Qualitative content analysis was used to analyse the content of narrative documentation. For the purpose of this study structured data was coded to the following variables: de-identified patient id (created for the study), counseling time by shift (morning/evening/night) and personal type (registered nurse/primary nurse/other).

Coding and analysis of the narrative documentation was performed independently by two researchers familiar with nursing practice and documentation. The disagreements (n=26) in coding were resolved by referring to the original free text descriptions. The content analysis of the unstructured narrative supplemental documentation revealed two main categories (Medication counseling with interaction and medication counseling without interaction) and further 11 sub categories that described the content of medication counseling (Table 1). The major category 'medication counseling with interaction' refers to documentation of medication counseling that involves interaction with the patient. For example, if the patient and nurse conducted a discussion of the proper method for self-administration of the medication, this documentation was categorized as 'medication counseling with interaction. On the other hand, if a nurse was only delivering information regarding a medication to the patient without any verification of the patient's understanding of this information, this documentation was categorized as 'medication counseling without interaction'. All documentation entries were entered into the information system by the healthcare providing the counseling shortly after the intervention was performed.

Results

Documentation Patterns

The data (N=379) evaluated consisted of descriptions of medication counseling entered in an electronic record in both structured and narrative formats. Medication counseling was

mostly provided by registered nurses (N=366). Only 13 other staff documented medication counseling in the record: primary nurses (n=10) and ward sisters (n=3). Counseling was documented only once for the vast majority of the patients (N=269), 74 patients had two documentation entries, of medication counseling 20 had three, 9 had four, 4 had five and 3 had six entries. Only one patient had seven narrative descriptions of counseling. Thus the average frequency for counseling documentation per patient was 1.4 per hospital admission. Counseling occurred mainly during the morning shift i.e. between 7 am and 3 pm (n= 283). Nearly 25% of the counseling (n=89) was provided in the evening before 9 pm, and 2% (n=7) during night shifts.

Unstructured Narrative Text Entries

In the category 'Medication counseling with interaction' the interactions with patients documented in the narrative text were mostly related to giving verbal instructions. Those counseling descriptions containing interaction could be differentiated into the categories: discussion (n=19), refresher/repetition (n=13) and side effects (n=9). Patient participation such as practicing was also used when educating patients to give injections for themselves. Those descriptions also contained assessment of the teaching success (e.g. *"injection succeeded").* When patients were given instructions verbally or given printed teaching material there usually were also narrative documentation regarding the patient's interaction with the nurse (n=30). For instance there were narrative documentation entries regarding changes in timing or dose or nutrition.

In the category Medication counseling without interaction the most often used method for counseling was giving verbal instructions when administering medication to patients (n=95) as shown in Table 1.

When administering medication verbal instructions contained descriptions regarding the dose, timing, route and the purpose of the medication. However, the descriptions of medication counseling did not contain any descriptions of the feedback from patients. Nurses documented using a variety of teaching materials with counseling leaflets being the most common. Many of these descriptions (n=47) did not have any information about patients reactions or comments.

Table 1- The contents of unstructured text and their frequencies complementing the use of FiCNI code Medication counseling (n=379)

Medication Counseling with Interaction	
Verbal instructions and written material	30
Practice and assessment	26
Verbal instructions - discussion	19
Verbal instructions - refresher	13
Verbal instructions - side effects	9
Demonstration and assessment (discussion)	1
Total	**98**
Medication Counseling Without Interaction	
Verbal instructions - medication administration	95
Written instructions: manuals, leaflets, other written material, video	47
Diary	6
Practice	5
Demonstration	1
Total	**154**
No narrative content	**127**

Discussion

Medication Counseling

The creation of categories to describe free text narrative entries analyzed in this pilot study were intended be very discrete to be able to differentiate the narrative descriptions of counseling methods. The categorization may have resulted in some overlapping between the categories *written instructions* and *verbal instructions with written material* due to some short narrative free text descriptions. The distribution of medication counseling with and without interaction as a result of the content analysis was a little surprising. However, based on the results it was obvious that a lot of teaching material is given to patients without any description of patient's learning outcomes in the records. The frequencies of documentation entries in the two categories counseling with interaction and counseling without interaction were eminent. They revealed that a lot of counseling is performed without any documentation of feedback from patients. We were unable to determine from the data whether the counseling occurred near discharge, an important time for counseling based on previous studies [1].

The most often used counseling method was discussion with patients i.e. giving verbal instructions when administering medication. However, medication administration should be interactive when possible and narrative entries related to counseling did not include any documentation of perceptions from patients. Friberg et al. (2006) in their study emphasizes the importance of the interaction between the patient and the nurse when delivering teaching material [3]. A variety of teaching materials such as manuals, leaflets and videos were also used when counseling patients. In this study the nurses had not documented any use of computerized or web-based material when counseling patients.

In this study, we found that the medication component was used for documentation of medication counseling in only 10% of the patient records in this surgical ward. It is not clear if this documentation is an accurate record of the frequency that medication counseling is actually occurring in this ward or if more counseling is occurring than is being documented. Counseling is a very demanding activity in hospitals due to the number of medications used in therapeutic treatment [13,15] and the amount of time needed to educate patients in their medication regimen [17]. Surprisingly, almost one third of the medication counseling documented did not have any narrative description. This may be due to an understanding among certain healthcare professionals as to standard and accepted content of medication counseling. Whether or not true the data does not support this argument. A better understanding of the reason for the lack of documentation would allow us to design either an educational intervention to encourage accurate documentation or an intervention to ensure that all patients are receiving medication counseling Previous studies suggest that medication education should be assessed to assure that patients receive appropriate medication education [3, 13]. Perhaps the addition of structured codes representing the content of counseling sessions would decrease the time necessary to document these actions and increase the rate in which nurses document counseling activities.

Additional FiCI Categories

According to previous studies nurses have a tendency to use the subcategories of the nursing classification in various ways. [12, 18] In this study nurses had also made narrative notes about medication care in *Activity* and *Health Behavior* components documentation section of the electronic record. Nurses also gave information to patients concerning side effects of medication therapy using the medication counseling code. In the FiCNi classification the medication component has a structured code for side effects. Thus, these descriptions should be additional information to documentation using the side effect code.

The data for this pilot study were collected only from one surgical ward. Thus, the results only reflect the situation in one hospital ward. However, the data provided a good opportunity to analyze counseling methods used by nurses. The use of a nursing classification in this electronic medical record is also available for physicians. These data only represent nursing staff using the platform for documenting medication counseling. Pharmacists being an important group regarding knowledge in medication therapy did not participate in this hospital in the medication administration process. Increasing the use of this portion of the record for documentation of medication counseling by other healthcare professionals would increase our ability to monitor this interventions and its impact of patient care.

More data is needed to make accurate recommendations for potential additions to FiCNI codes for medication counseling. However, it seems that those counseling methods containing interaction with patients: verbal instructions with discussion, refresher, and use of written material could be potential additional codes in the future. The most natural and beneficial time for counseling might be when administering medication to patients. Increasing the use of and documentation of medication counseling with patient interaction could increase medication safety and patient satisfaction. For example, patients need practice and nursing feedback to adequately learn to give themselves injections. This could happen after a nurse's demonstration during the medication administration process. The option for patients to keep a diary and get feedback from the healthcare provider is another potential addition to structured codes that might be added to the category of medication counseling in the future.

Conclusion

The narrative free text analyzed in this study suggested the need for additional structured codes be added to the FiCNi component for medication counseling. The structured coded subcategories would help nurses document more precisely the content of nursing activities in medication care. More research is needed to test the validity of the subcategories prior to implementing them as a part of medication component and medication counseling category of the FiCNI.

References

[1] Kerzman H, Baron-Epel O and Toren O. What do discharged patients know about their medication? Patient Education and Counseling. 2005:56:276-82.

[2] Nurit P, Bella BC, Gila E and Revital Z. Evaluation of a nursing intervention project to promote patient medication education. Journal of Clinical Nursing. 2009:18:2530-2536.

[3] Friberg F, Bergh A-L and Lepp M. In search of details of patient teaching in nursing documentation – an analysis of patient records in a medical ward in Sweden. Journal of Clinical Nursing. 2006:15:1550-1558.

[4] Müller-Staub M, Lavin MA, Needham I and van Achterberg T. Nursing diagnoses, interventions and outcomes – application and impact on nursing practice: systematic review. Journal of Advanced Nursing 2006:56: 514-531.

[5] Dochterman J, Titler M, Wang J, Reed D, Pettit D, Mathew-Wilson M, Budreau G, Bulechek G, Kraus V, Kanak M. Describing use of Nursing Interventions for Three Groups of Patients. Journal of Nursing Scholarship 2005:37:57-66.

[6] Saba VK and Taylor SL. Moving Past Theory. Use of a Standardized Coded Nursing Terminology to Enhance Nursing Visibility. CIN: Computers, Informatics, Nursing 2007: 25:324-331.

[7] Moss J, Damrongsak M and Sobko H. Representing critical care data using the clinical care classification. In: Proceedings of the American Medical Association Annual Symposium, Washington, DC, 2005; pp. 545-549.

[8] Moss J, Andison M and Gallichio K. An Analysis of Narrative Nursing Documentation in an Otherwise Structured Intensive Care Clinical Information System. In: Proceedings of the American Medical Association Annual Symposium, Washington, DC, 2007; pp. 543-547.

[9] Saba VK. Clinical Care Classification. 2009. http://www.sabacare.com

[10] Ensio A and Saranto K. The Finnish Classification of Nursing Interventions (FiCNI) – Development and Use in Nursing Documentation. In Clark J (ed.) Naming Nursing. Proceedings of the first ACENDIO Ireland / UK Conference held September 2003 in Swansea, Wales UK. Bern: Verlag Hans Huber, 2003; pp. 191 – 195.

[11] Jokinen T, Ensio A, Saranto K: Nursing Documentation using Classified Nursing Interventions. In Hyeoun-Ae Park, Peter Murray & Connie Delaney (eds.) Concumer-Centered Computer-Supported Care for Healthy People. Proceedings of NI2006. IOS Press, Amsterdam, 2006: 995.

[12] Saranto K, Ensio A, Jokinen T: Patient Medication - How is it documented? In Hyeoun-Ae Park, Peter Murray & Connie Delaney (eds.) Concumer-Centered Computer-Supported Care for Healthy People. Proceedings of NI2006. IOS Press, Amsterdam, 2006: 738-741.

[13] Ponnusankar S, Surulivelrajan M, Anandamoorthy N and Suresh B. Assessment of impact of medication counseling on patients' medication knowledge and compliance in an outpatient clinic in South India. Patient Education and Counceling. 2004:54: 55-60.

[14] Jylhä V, Saranto K. Electronic documentation in medication reconciliation - a challenge for health care professionals. Applied Nursing Research 2008:21: 237-239.

[15] Bates D. Combuterized physician order entry and medication errors: Finding a balance. Journal of Biomedical Informatics. 2005:38: 259 – 261.

[16] Ammenwerth E, Schnell-Inderst P, Machan C and Siebert U. The effect of electronic prescribing on medication errors and adverse drug events: a systematic review. Journal of American Medical Informatics Association. 2008:15:585-600.

[17] Keohane CA, Bane AD, Featherstone E, Hayes J, Woolf S, Hurley A, Bates DW, Gandhi TK and Poon EG. Quantifying nursing workflow in medication administration. J Nurs Adm. 2008:38:19-26.

[18] Jylhä V, Saranto K. Narrative Text in Structured Documentation of Medication Risks and Side Effects. In: Saranto K, Brennan P F, Park H, Tallberg M, Ensio A (eds.) Connecting Health and Humans. Proceedings of NI2009. Helsinki: IOS Press BV, 2009; pp. 434-438.

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