

TELENURSE - Nursing Classifications, Quality Indicators and the Electronic Nursing Record

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Abstract. In the area of nursing, national and international clinical databases are practically non-existing. The lack of common nomenclatures and classifications is the main reason for this situation. This article elaborates on the TELENURSE project's two objectives which focus on improving that situation. The first objective concerns the "The International Classification for Nursing Practice" (ICNP) and methods for implementation of ICNP electronically in nursing modules of electronic patient records. The second objective concerns the development of a clinical nursing database in which clinical data collected from electronic nursing systems can be stored. On the basis of this data storage, nursing indicators can be developed, which in the long term allows for comparison of nursing interventions across Europe.

1. Introduction

In the nursing community, there is considerable interest in recording nursing activities in a structured manner and in being able to use the structured data for assessment and comparison of the quality of nursing care provided at local, regional, national - and even international - levels. Due to the lack of internationally accepted nomenclatures and classifications, which provide a framework for suitably structuring nursing information, it has until now been very difficult to effectively satisfy this interest. Additionally, the limited use of electronic nursing records by nurses in their daily work makes the provision of structured and standardised nursing data almost impossible.

It is within the framework of the TELENURSE project to address these issues, relying on the latest developments in classifications and electronic health care records.

The TELENURSE project is an accompanying measure under the EU Telematics Applications Programme for Health. The project is co-ordinated by the Danish Institute for Health and Nursing Research (DIHNR), and the project participants come from practically all EU countries.

The focus of this article is on the TELENURSE project and the relation between nursing classifications, quality indicators and the electronic nursing record. In the following, the TELENURSE project will be briefly described. Furthermore, the developmental activities within the project, including a description of the NUREC-DK demonstrator and the clinical database, will be elaborated on.

2. The TELENURSE Project

The primary purpose of the TELENURSE project is to promote consensus in Europe on the International Classification for Nursing Practice (ICNP) [1]. The ICNP was initiated in 1990 by the International Council of Nurses (ICN) as a long-term project to advance nursing care throughout the world. More specifically, the objective was to establish a common language for nursing practice to be used for describing the nursing care in a variety of settings in such a way that it may be compared across populations, settings, geographical areas and time. Through the TELENURSE project, the EU has funded the promotion of ICNP in Europe and a field test of an alpha version of the classification.

A secondary purpose of the TELENURSE project deals with the implementation of the ICNP in small scale demonstrators of nursing modules of electronic nursing records in different countries in Europe. Furthermore, TELENURSE deals with the illustration of how data entered in the electronic nursing record can be extracted for use in clinical databases - in the first instance at local and national levels, but in the long term also at the level of a European clinical nursing database. This allows for comparisons between nursing activities in different countries in Europe.

It should be noted that the demonstrator developed in the TELENURSE project should not be seen as a complete electronic nursing record. The demonstrator should be seen as selected parts of an electronic nursing record. These parts are necessary in order to be able to implement and validate the ICNP for documentation of nursing activities and for illustration of the potential of ICNP as a means of comparing nursing activities between different organisations and health care institutions.

3. The Developmental Activities

To successfully implement a new classification and define the contents of a European clinical database, which can form the basis for a commonly approved set of indicators for monitoring nursing activities, is a difficult task. For the outcome of this task to be a success, the problems should be approached in a step-wise and iterative manner, which allows for continuous improvement based on user inputs. Therefore, the project has carefully ensured that the development activities support this process and provide an avenue for new concepts to be discussed, defined and tested.

The concepts and their interaction are illustrated in figure 1 below, and the following sections will describe an example of one of the electronic nursing records in TELENURSE, the NUREC-DK demonstrator, the clinical database and their interdependence with the nursing indicators.

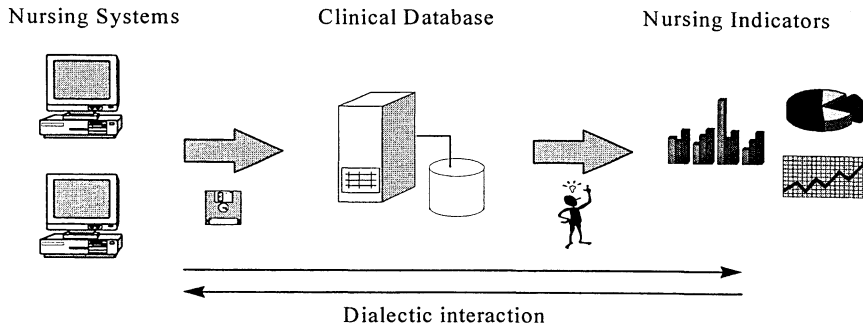


Figure 1 - Context of the Clinical Database

As it is illustrated above, there is close connection and interdependence between the nursing systems, the clinical database and the nursing indicators. Only data which is actually recorded in the electronic nursing record can be transmitted to the clinical database, and the nursing indicators can, of course, only be based on data which is actually available in the clinical database. Consequently, the three components have to evolve in a dialectic interaction. For instance, a demand for a certain nursing indicator could have an impact on the data entries made into the nursing systems, whereas the introduction of new data items in the nursing systems may lead to the formulation of new indicators. This dialectic interaction is a continuous process to which the TELENURSE project provides an important and efficient avenue for new concepts to be discussed, defined and tested.

3.1. The NUREC-DK Demonstrator

Specifying the design of an electronic nursing record involves both a specification of the sort of information which should be contained in the system, of how the information should be presented and of how the user should interact with the computer. Considerable effort has gone into resolving these issues in the TELENURSE project.

The design of NUREC-DK is based on the concepts and informational contents in an existing Swiss demonstrator developed by the Swiss partner in the TELENURSE project, "Hopitaux University de Geneva (HUG)". The Swiss demonstrator, "Group d'Etude pour un Processus de Soins Informatisé (GEPSI)" [2], was developed in 1991-1992 and has been verified in several wards in the University Hospital in Geneva.

The general design of the user interaction with the system is built on a theoretical framework for computer-based medical records founded in cognitive modelling [3,4]. The overall idea is that in addition to the potential advantages of the computer-based system, the computer-based medical record has to retain the advantages of the paper-based medical record. With the purpose of obtaining a basis for the design of a user interface for reading the medical record from a computer screen, the framework is primarily based on a study on how the paper-based medical record is, in fact, used by the physicians and nurses today.

NUREC-DK will be implemented through the use of DocuLive®EPR which is the software tool which was developed by Siemens Nixdorf in Norway as a result of the NORA project [5]. The general design of the user interaction in DocuLive®EPR is based on a paper metaphor: The record is presented as imitations of paper pages. The pages are organised in bundles which are dynamically connected to scrollable index lists. The navigation in and presentation of the pages are fundamental concepts of the interface. The user interface is

designed and will be implemented on a workstation with a 19-inch colour screen with the page size as close to A4 as possible. In this way, it is anticipated that the project will achieve, as its primary goal, a design of the user interface for an electronic nursing record which is smooth and efficient for routine use by the nurse and which, on the basis of ICNP, supports the structured documentation of nursing activities.

3.2. The Clinical Database

Today, the number of relevant national and international clinical databases which contain data on outcomes of nursing interventions is very modest. This is, as mentioned above, primarily due to the lack of common nomenclatures and classifications. However, a few initiatives related to clinical databases in nursing have been made. The two most important of these initiatives are the approach applied by Katholieke Universiteit Leuven, Centre for Health Services Research, on the management of Belgian nursing activities [6], and the findings in a project on clinical quality in nursing undertaken by DIHNR and the Danish validation site in TELENURSE, Odense University Hospital [7]. These initiatives have been taken into account and have served as inspiration in the logical design of the clinical database in TELENURSE.

In the TELENURSE approach, data for the clinical database will be provided as an extraction from the NUREC-DK demonstrator developed in the project. Furthermore, in preparation for meeting the long-term objective of making nursing data comparable on a European scale, the data set for a European clinical nursing database will be specified in TELENURSE.

It is important to recognise that the system is designed so that the data for the clinical database can be automatically extracted from the electronic nursing record. Thus, the clinical database will impose no extra burden on the clinical staff at the hospital - the data in the clinical database is simply generated from data which the nurse enters in NUREC-DK as a natural and integral part of the daily work routines. This means that data will only have to be entered once - in NUREC-DK - and there will be no need for a separate system to capture the quality data. This is not only time-saving, it will also ensure correctness and timeliness of data in the clinical database.

The difference between clinical databases and the electronic nursing record is that the purpose of data recording in the clinical databases is primarily focused on a retrospective evaluation of the treatment, whereas data recording in the electronic nursing record focuses on the patient needs in the course of a treatment. However, it is important to realise that the data is the same, and it differs only in terms of structure and level of aggregation.

Another important component in the context of clinical databases is the nursing indicators. Until now, the amount of valuable internationally comparable information on nursing activities has, as mentioned, been very limited, primarily due to lack of structured and comparable nursing data in an electronic form. Furthermore, the definition of a commonly approved set of indicators on nursing activities has not yet been formulated. The clinical database will provide structured and comparable nursing data. In the course of the project, this data will be analysed, and through the use of available analysis and manipulation tools it will be turned into a wide range of meaningful nursing indicators. It is expected that the experiences from the analysis and use of the data in the clinical database will lead to the formation of a formalised and commonly accepted set of indicators for monitoring nursing activities across Europe.

4. Conclusion

The long-term objective of the TELENURSE project is to obtain the ability to analyse and compare nursing quality data. As described above, this objective will be reached through the development of ICNP towards a validated and generally accepted classification for description of nursing activities as well as through the use of this classification in electronic nursing records and in a common European quality database which receives data from the electronic patient records. Thus, this quality database constitutes the data basis for the required nursing indicators. The development activities which take place at the moment are important steps in the right direction. As regards implementation of ICNP in the Danish demonstrator, the important factors for successful implementation of an electronic nursing record can be comprised under three points:

- The development is based on verified concepts and experiences from the existing Swiss demonstrator (GEPSI) and on the theoretical framework for the development of electronic patient records.
- The development will - to as great an extent as possible - comply with the European standard for electronic patient record architecture (EHCRA - European Healthcare Record Architecture) and it will, together with the theoretical background, form the best possible basis for the integration with the complete common electronic patient record.
- Finally, the work is organised in a step-wise approach and in close co-operation with a user group, all of which ensures the most effective use of the resources available in the TELENURSE project and which will render it possible that the result of the development will prove to be satisfactory to the users.

As regards the clinical quality database, it is important to note that the design, which is specified in the project, is to be seen as an alpha version. Through experimenting with, combination and analysis of this data and creation of nursing indicators, it is anticipated that one step further is taken in the right direction towards establishment of an internationally recognised set of indicators for monitoring nursing activities.

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