J Med Syst (2016) 40: 198
DOI 10.1007/s10916-016-0546-x

SYSTEMS-LEVEL QUALITY IMPROVEMENT

The Status of Nursing Documentation in Slovenia: a Survey

Uroš Rajkovič[1] · Marija Milavec Kapun[2] · Dejan Dinevski[3] · Vesna Prijatelj[4] · Marija Zaletel[2] · Olga Šušteršič[2]

Received: 29 December 2015 / Accepted: 13 June 2016 / Published online: 26 July 2016

Abstract Health documentation is a prerequisite for good and sustainable health and social care. It is especially important for patient involvement and their empowerment. A transition from paper to e-documentation together with the electronic patient record should be based on thorough knowledge of the current state of documentation and its usages. The main objective of this paper was to analyse which documents and work methods of documenting processes within nursing are being used within different environments. Furthermore, what are the main reasons for their discrepancies from theoretical approaches and best practices. The analysis is based on a survey carried out on all three levels of healthcare. The survey questionnaire consisted of 12 questions to which responded 286 nursing teams from community health centres, hospitals and retirement homes in Slovenia. The results point to diversity in documenting as well as lack of interoperability. This is reflected in a great number of different documents. All phases of the nursing process were being documented in only 31.8 % of cases. The main reasons for this can be attributed to work organisation, different definitions of data-set requirements and inadequate knowledge by nurses. Survey results pointed out a need for the renewal of nursing documentation towards a more uniform system based on contemporary health technologies.

Keywords Documentation · Information technology · Nursing

This article is part of the Topical Collection on *Systems-Level Quality Improvement*

✉ Uroš Rajkovič
uros.rajkovic@fov.uni-mb.si

[1] Faculty of Organizational Sciences, University of Maribor, Kidriceva cesta 55a, 4000 Kranj, Slovenia

[2] Faculty of Health Sciences, University of Ljubljana, Poljanska cesta 26a, 1000 Ljubljana, Slovenia

[3] Faculty of Medicine, University of Maribor, Taborska ulica 8, 2000 Maribor, Slovenia

[4] University Medical Centre Ljubljana, Zaloska 2, 1000 Ljubljana, Slovenia

Introduction

The quality of nursing documentation is problematic all over the world in all types of settings [1]. The status of nursing documentation in Slovenia is not known and it requires assessment in order to focus on its weaknesses before it is renewed.

Our research group was entrusted to us by the Ministry of Health of the Republic of Slovenia as a study regarding the state of documenting in nursing. The purpose was to come up with recommendations for designing a new documentation that would contribute to improving the quality of nursing and thus healthcare as a whole. The underlying hypothesis was that nursing documentation in Slovenia is fragmented and as such does not support the nursing process. A survey regarding the uses and adequacies of existing documentation was carried out. The objective of the survey was thus to establish both the actual conditions of the documentation and the processes of documenting as well as to collate the perceptions (opinions, considerations) of existing problems and possible solutions on the part of those surveyed [2, 3].

Special focus was on nurses' expectations about potential documentation renewal. This meant gathering information about the meaning of documentation, for example which elements of documenting should be given priority, where are the

biggest discrepancies between the existing and desired documentation. A further aim was to assess the options for successful implementations of new documentation that would be based on the nursing process, use of classifications and be supported by information technology [4, 5].

One of the key aims was to examine the possibilities for introducing electronic nursing records integrated within international nursing standards for improving the proficiency and accuracy of the nursing care plan in the clinical pathway process [6, 7]. Consequently, this would lead to increased safety of the patient and members of the healthcare teams [8, 9]. An additional challenge presented itself in a more active patient involvement during the treatment process [10–12].

Methods

The Republic of Slovenia has a population of approximately two million. It became independent in 1991 and is a part of EU since 2004. Its largest cities are Ljubljana and Maribor. Health is a constitutional right and it is declared egalitarian. There are 52 health care centres, 99 retirement homes and 26 hospitals. Together they employ approximately 14.000 nursing staff.

Sample

A judgment sample included the Community Health Centre Ljubljana with five units, University Medical Centre Ljubljana, University Medical Centre Maribor and three retirement homes in Ljubljana. These organizations employ approximately 6.000 nursing staff. We have distributes two questionnaires to each nursing team in the before mentioned institutions. Around 70 % of participants were registered nurses and 30 % were nursing assistants.

Procedure and measures

The questionnaire was developed by an expert panel and pilot tested on 20 nurses. Following their remarks, corrections were made. The questionnaire was distributed in paper form and contained 12 closed and open type questions. The survey was anonymous and lasted for 2 months. 386 questionnaires were initially sent out and the response rate was 74.1 %.

The first two questions dealt with the kind of healthcare service the participant was involved in and his/her formal education. The purpose was to compare the influences of these two characteristics on other answers provided.

Amongst the possible responses to the third question were listed the possible purposes of documenting. The purpose of documenting is a key for understanding the importance of documentation and the structure of the documents in order to address all the criteria required by a specific purpose.

The following questions dealt with documenting during work:

- How much time do you spend daily filling out documentation forms? From this data, it was later possible to assume that some respondents do not use healthcare documentation at work at all.
- How much time elapses between the time the patient is admitted and nursing care is planned? This is namely the time when some key data can be overlooked. The end goal was to plan nursing care right from the moment of admittance. However, the admittance document itself is so extensive and time consuming that it presents a bottleneck in the process.

With these two questions, the intention was to gather data to measure time savings and to determine whether simplification of documenting is a sensible decision.

The sixth question tackled the issues pertaining to the nursing process. Respondents gave answers regarding the phases they use and which of those are supported by documentation. If the documentation does not make it possible to note specific phases, then the documentation alone presents an obstacle for nursing process implementation. Moreover, if the nursing process is not being used, this signifies that the benefits of carrying out work in accordance with the sub-processes and phases are not being recognised for their advantages.

Question number seven dealt with the minimum data sets used in nursing. More specifically, these data sets should be collected at work but not all during all services. How paper documentation supports minimal data sets was of interest for the research.

The eighth question was the most extensive. The aim was to collect the number and the types of documents in use. For each document, the respondents specified the following:

- Is the document obligatory? This way we could find out, if the use of the documents is contingent on their enforcement.
- How often the document is used and if it is not always, why not? Patterns of most widely used documents this way became apparent.
- Is documenting supported with information technology? What is the extent of use of information technology in the process of nursing care?
- Are classifications being used when filling out document forms? If this is not the case, data were difficult to compare amongst different institutions, while free text was difficult to analyse. Are classifications at all in use and which are they?

The focus of the ninth question was on sources, which the members of the nursing team use to obtain the necessary data.

The sources of subjective data are interviews with the patient and the patient's family, while the sources of objective data are observations and measurements. Data from medical documentation and documentation from other institutions are data that have already been recorded but most often need to be copied manually.

Interlinked questions number 10 and 11 dealt with the differences between the existing and desired documentation. In other words, what would be the advantages of better formulated and structured documentation in comparison with the existing system.

The last question was an open type of question dedicated to possible comments. Later it turned out that more than a half of all the respondents replied to this question. However, it was possible to aggregate their responses into several groups.

Data analyses

Statistical package IBM SPSS Statistics 20 was used to carry out the statistical part of the analyses. Cross tabulations were used to analyse contingency tables from multivariate frequency distributions of statistical variables. In order to analyse responses to question eight regarding the type and number of documents in use, a database was constructed in Microsoft Access 2010. Codes were added to the database and outputs were prepared for the experts who later classified those documents into comprehensive groups in cooperation with the participating institutions.

Results

The analyses of the results are presented in the same order as the questions.

When answering the question regarding the purpose of documentation and documenting, the respondents could choose one or more responses. Table 1 shows these responses ordered by their frequencies.

When applying cross tabulation to questions two and three, several interesting findings were observed. In terms of content, more than half of nursing assistants (54.2 %) did not perceive documentation as a work support tool, while more than 2/3 of registered nurses held contrary opinions. The significance it holds for the research and development in nursing care was recognised by 85.7 % of registered nurses. Importance for assuring patient safety was noted by more than 2/3 of respondents and for assuring safety for the members of the nursing team over 80 %, respectively, regardless of the level of education. Safety for the members of the nursing team is understood as legal safety for nurses.

Cross tabulation of job/service groups and the third question revealed the following. The purpose of documentation to facilitating statistical analyses was recognised by 54.3 % of respondents from hospitals and 80.6 % of respondents from the primary level of health care (community health centres and retirement homes). The purpose of documenting as work support in terms of content, education, research and development of nursing, continuity of nursing and monitoring of workload of the members of the nursing team was acknowledged by all the respondents (nurses) from the retirement homes (100 %), while the smallest share of respondents came from outpatient clinics and dispensaries (36.0 % - 82.4 %). The role of documenting in ensuring safety for the patient and members of the nursing team was again recognised by all the respondents from the retirement homes (100 %) while the smallest share of those respondents who agree with this statement comes from community health centres (70.9 % and 69.8 % respectively).

The respondents claimed that during one work shift (8 h) they on average spend 85.8 min of *time for filling out nursing documentation* (standard deviation 71.5 min, median 60 min) which accounts for 17.7 % of their working time. There are no statistically significant differences between nursing assistants and registered nurses ($p = 0.090$).

To the question as to *when after the patient's admittance do you plan his/her nursing care*, 70.6 % of survey participants responded that nursing was planned straight at the point of admittance. A delay of more than 24 h was witnessed only by 1.6 % of respondents.

The answers to the question regarding *the use of nursing process phases and support provided by the documentation* were divided into three groups (Fig. 1):

- No phases: no element of the nursing process was being used,
- Some phases: at least one phase of the nursing process was being used but not all the phases, and
- All phases: all phases of the nursing process work were being used [7].

Users of all phases were the more often represented (73.7 %) in intervals spending 31–120 min for documenting.

Figure 2 depicts to what extent *certain categories of data were being recorded* by the respondents and how relevant they were for their work.

The two main *reasons for not using nursing documentation for all the patients* were the insufficient number of nursing staff (24.5 %) and insufficient knowledge about the nursing process (24.1 %).

The average *number of nursing documents* the respondents used at work was 5.33 (std. dev.: 4.84, median: 4).

In total, the respondents listed 1524 documents they used at work. In 143 cases (9.3 %) were listed documents that belonged to medical and other health documentation. 86.2 % of all documents were obligatory. The above mentioned expert

Table 1 Purpose of documenting, answers ordered by frequencies of responses

Purpose of documenting	Total (n = 286)	Per sectors			
		RH (n = 12)	CHC (n = 86)	HOS (n = 188)	p
Continuity of nursing care	81.8 %	100.0 %	77.9 %	82.4 %	0.399
Safety for the members of the nursing team	81.1 %	100.0 %	69.8 %	85.1 %	**0.005**
Safety for the patient	78.3 %	100.0 %	70.9 %	80.3 %	**0.038**
Workload overview for the members of the nursing team	73.4 %	100.0 %	65.1 %	75.5 %	0.056
Support of work in terms of content	65.0 %	100.0 %	65.1 %	62.8 %	**0.032**
Research and development of nursing care	63.3 %	100.0 %	60.5 %	62.2 %	**0.025**
Statistical analysis	63.3 %	91.7 %	79.1 %	54.3 %	**<0.001**
Education	47.6 %	100.0 %	36.0 %	49.5 %	**0.001**
Financial reporting	38.1 %	75.0 %	58.1 %	26.6 %	**<0.001**

RH retirement homes; *CHC* community health centres; *HOS* hospitals; *bold p denotes Pearson Chi-Square's significance < 0.05*

group aggregated the documents into 34 types. Among the types of documents, the following were the most widely used: Care plan (11.6 %), Discharge document (9.3 %), Nursing summary (8.0 %), Admission document (6.8 %) and Unwanted event report (6.5 %).

The use of standardised international classifications was noted only by 3.1 % of respondents. Computers were being used only for 12.8 % of the documents.

Documents that were often represented in both groups – being used by the majority or when/where necessary were the following:

- Medication administration record (always 63.0 %, when necessary 34.8 %),
- Care plan (always 60.2 %, when necessary 28.3 %) and
- Discharge document (always 31.3 %, when necessary 68.7 %).

With the question regarding the *data sources needed for filling out the documents* it became apparent that in more than half of all cases the data were collected by talking to a patient (67.9 %), patient observation (67.6 %) and with measurements (56.9 %). Almost half (48.2 %) of the respondents listed other healthcare documentation as a data source that was always used. The majority (55.8 %) stated that they often gathered information about patients from their family members (Fig. 3).

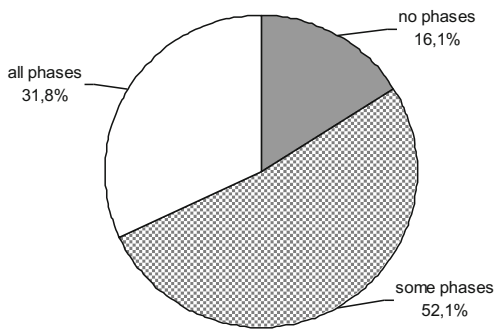

Fig. 1 Use of nursing process

With the tenth question, we enquired about what according the respondents' opinions does documentation have impact on and with the eleventh what could be improved with documentation re-engineering. The average values of responses[1] are stated in the parenthesis for the four more popular statements[2]:

1. Quality of healthcare (2.740; 2.838),
2. Uniform work doctrine (2.722; 2.839),
3. Lowering the possibility of mistakes occurring (2.714; 2.819), and
4. Place and role of nursing in the healthcare system (2.502; 2.720).

We could conclude that there are evidently both expectations and aspirations for nursing documentation re-engineering.

In regard to question twelve »*What would you change or add regarding nursing documentation*?« 174 (60.8 %) respondents provided answers, which could be summarised as follows: new documentation needs to be more transparent and comprehensive in comparison to the existing one, concise and structured (44[3] respondents); new documentation needs to be uniformed (36 respondents); new documentation has to

[1] The values of responses were transformed into numerical values with the lowest value 1 meaning the respondents disagree with the statement (answer »no«). The highest value 3 means the respondents agree with the statement (answer »yes«). Middle value 2 corresponds to the answer »to some extent«. That is how the average values were calculated.

[2] The first value in the parenthesis is the average value of responses calculated for the tenth question and the second one is the average value of responses to the eleventh question.

[3] 25.3 % of those who provided answers to the question of the open type.

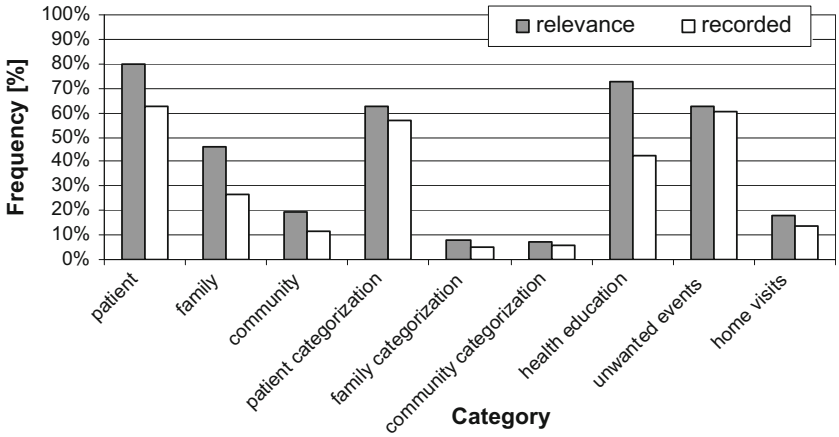

Fig. 2 Relevance and recording of minimal data set categories

support easier data input, e.g. more ticking instead of entering full text (27 respondents); use of computer supported documentation is needed (24 respondents); the data should be entered only once without duplication (17 respondents).

Discussion

The presented study pointed out the fragmentation and variability of nursing documentation thus further implying the incoherence and inconsistency of organisational models in nursing. The majority of documents (86 %) are prescribed at the level of the institution. The only exceptions are community nursing and retirement homes. Documentation for community nursing is prescribed and unified throughout the country, while retirement homes have uniform computer-supported information systems. The benefits of retirement homes working together to identify best practices were also reported in a Canadian research, where they lack uniform policies and documentation [13].

Fragmented documentation is a common problem and further research on redesigning new nursing documentation must focus on unification on the national level together with the use of standardized nursing classification systems [14, 15].

Less than 13 % of documents were computer-supported. Amongst the types of documents, the following were most frequently listed: care plan, discharge document, nursing summary, admission document and unwanted event reports. This nursing documentation is included in health care information systems in surveyed organizations and they are a part of EHR. According to two separate studies in Australia, registered nurses spent 17.7 and 20.0 % of their working time documenting patient care [16, 17]. Their results after the implementation of HER are controversial, one research pointed out that the computer-supported documentation decreased the time nurses spend on documentation (16.2 %) while the other showed increased time (28.5 %). We believe that the time spent documenting is not the main benefit of electronic documentation.

It can be concluded that those five most frequently used documents should be unified firstly, by taking into account the specificities of individual services. Given that with contemporary information technology, we can generally provide effective support to documentation and increase the use of computers [14].

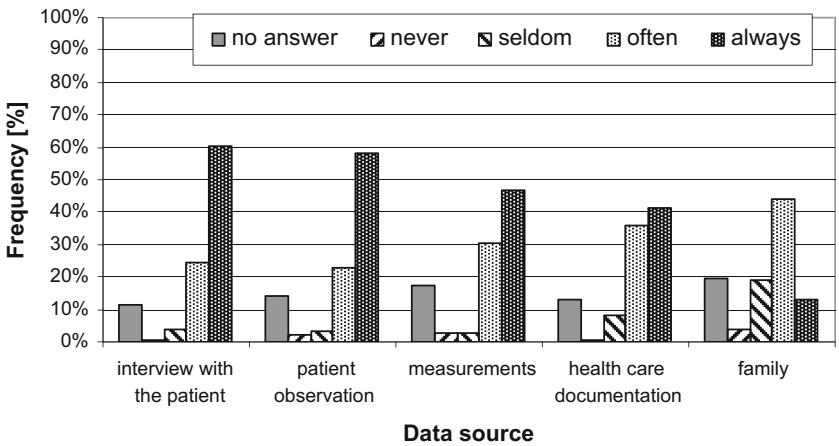

Fig. 3 Frequencies of data sources use regarding the nursing care subjects

From the perspective of content, a nursing process as a method of work was only used in 32 % of nursing documentation. Over 52 % used only a fragmented process approach. Our results are similar to those reported in Finland [15], in which electronic documentation based on the nursing process positively contributes to patient outcomes. It appears that existing documentation in Slovenia is to a large extent at fault for this, as the majority used only those elements that the documentation enabled. It would therefore be sensible to re-engineer the documentation in such a way that would enable documenting of all the phases of the nursing process [18, 19].

Minimal data sets on patients were recorded by three quarters of survey participants. One of the reasons that the percentage was not higher was the inconvenience of the existing documentation that does not take into account the prescribed minimal data set [20, 21]. In Austria, implementation of nursing minimal data set is already taking place. According to the research some challenges must be addressed prior to implementing a nursing minimal data set, such as improving the quality of nursing documentation, reducing its fragmentation and widening the use of standardized nursing classification systems [14].

In the opinion of the surveyed nurses the purpose of documentation or documenting lies mainly in the continuity of nursing, security for members of the nursing team and the patient, and an account of the work of individual members of the nursing team. The content thus supports the work, with emphasis on the legal security of members of the nursing team and the patient [22, 23].

Among reasons for the non-use of nursing documentation, according to a quarter of nurses, understaffing and insufficient knowledge of the nursing process, and among unspecified reasons, the fact that existing documentation is unsuitable was the most often noted. Insufficient knowledge and inappropriate work organisation were also the reasons for inadequate use of standardised international classifications. Harmonisation with the international nursing standards at the same time would increase further research opportunities [24]. Further training of nurses in documenting patient care according to the nursing process is needed, as it was suggested also in the study of Häyrinen et al. [15].

In order to make it easier for nurses to handle large amounts of data and thus contribute to easier and improved decision making, e.g. regarding nursing diagnoses, we also propose the use of hierarchical decision models in documentation, e.g. to evaluate the patient's status according to the basic living activities that we have already proposed in our past research [25]. Thereby nursing outcomes would also be easier to assess and the possibility of overlooking something important in the nursing process would be lowered. An active role by the patient as the consumer in the nursing processes is indispensable in achieving this. That is why we recommend documentation reengineering in the direction of patient involvement in terms of content.

Conclusion

Based on the above presented results of the study regarding the current status of documenting in nursing, it is possible to conclude that a re-engineering and unification of documentation are absolutely needed. It should, however, be based on adequate data with an option of adding specific data depending on the differences in clinical pathways and other specific characteristics of some records. Furthermore, it should consistently follow all phases of the nursing process and the use of international standards, among them classifications. Although paperless documentation requires some organisational changes and the availability of information technology, even paper documentation needs to be planned along the same guidelines for e-documentation.

Further research should be focused on minimizing the possibility of adverse events and thus increasing patient safety and safety of nursing team members through means of transparency, selectivity, traceability, incorporating integral treatment and enabling analyses. Modern trends indicate widening of nurses' competences and more active patients' role in the treatment process. Therefore, further research should adopt these issues and focus on finding best use of contemporary information technology. However, we must preserve and encourage the creativity of nurses at their work, which computers can only support but cannot substitute.

Acknowledgments The authors are grateful to the nurses from the Community Health Centre of Ljubljana, University Medical Centre Ljubljana, University Medical Centre Maribor and retirement homes in Ljubljana: Moste-Polje, Šiška and Tabor for their participation in the survey.

Compliance with Ethical Standards

Conflict of Interest The authors declare that no conflict of interest exists.

Funding This research was financially supported by the Ministry of Health of the Republic of Slovenia, contract number C2711–707,502.

Ethical Approval This study was not subject to ethical review.

References

1. Paans, W., Sermeus, W., Nieweg, R.M.B., and van der Schans, C.P., Prevalence of accurate nursing documentation in patient records. *J. Adv. Nurs.* 66(11):2481–2489, 2010.
2. Saranto, K., Kinnuen, U.M., Kivekas, E., Lappalainen, A.M., Liljamo, P., Rajalahti, E., and Hypponen, H., Im pacts of structuring nursing records: a systematic review. *Scand. J. Caring Sci.* 28(4): 629–647, 2014. doi:10.1111/scs.12094.

3. Scruth, E.A., Quality nursing documentation in the medical record. *Clinical nurse specialist*. 28(6):312–314, 2014. doi:10.1097/NUR.0000000000000085.
4. Maust, D., Implementation of an electronic medical record in a health system: lessons learned. *J Nurses Staff Dec*. 28(1):E11–E15, 2012. doi:10.1097/NND.0b013e318240a715.
5. Sewell, J., *Informatics and nursing: opportunities and challenges*. Wolter Kluwers, Philadelphia, 2015.
6. Thoroddsen, A., Ehrenberg, A., Sermeus, W., and Saranto, K., A survey of nursing documentation, terminologies and standards in European countries. *Nurs Inform*. 2012:406, 2012.
7. Rocha, A., and Rocha, B., Adopting nursing health record standards. *Inform. Health Soc. Care*. 39(1):1–14, 2014. doi:10.3109/17538157.2013.827200.
8. Kent, P., and Morrow, K., Better documentation improves patient care. *Nurs. Stand*. 29(14):44–51, 2014. doi:10.7748/ns.29.14.44.e9267.
9. Mazlom, S.R., and Rajabpoor, M., Development and assessment of computerized software for nursing process: a step toward promotion of nursing education and care. *Iranian Journal of Medical Education*. 14(4):312–322, 2014.
10. Dent, M., and Pahor, M., Patient involvement in Europe – a comparative framework. *J. Health Organ. Manag*. 29(5):546–555, 2015. doi:10.1108/JHOM-05-2015-0078.
11. Severinsson, E., and Holm, A.L., Patients' role in their own safety—a systematic review of patient involvement in safety. *Open journal of nursing*. 5:642–653, 2015. doi:10.4236/ojn.2015.57068.
12. Sutton, E., Eborall, H., and Martin, G., Patient involvement in patient safety: current experiences, insights from the wider literature, promising opportunities? *Public management review*. 17(1):72–89, 2015.
13. McCloskey, R., Donovan, C., Stewart, C., and Donovan, A., How registered nurses, licensed practical nurses and resident aides spend time in nursing homes: an observational study. *Int. J. Nurs. Stud*. 52(9):1475–1483, 2015. doi:10.1016/j.ijnurstu.2015.05.007.
14. Ranegger, R., Hackl, W.O., and Ammenwerth, E., Implementation of the Austrian nursing minimum data set (NMDS-AT): a feasibility study. *BMC Med. Inform. Decis. Mak*. 15(1):75, 2015. doi:10.1186/s12911-015-0198-7.
15. Häyrinen, K., Lammintakanen, J., and Saranto, K., Evaluation of electronic nursing documentation – nursing process model and standardized terminologies as keys to visible and transparent nursing. *Int. J. Med. Inform*. 79(8):554–564, 2010. doi:10.1016/j.ijmedinf.2010.05.002.
16. Munyisia, E.N., Yu, P., and Hailey, D., Does the introduction of an electronic nursing documentation system in a nursing home reduce time on documentation for the nursing staff? *Int. J. Med. Inform*. 80(11):782–792, 2011. doi:10.1016/j.ijmedinf.2011.08.009.
17. Munyisia, E., Yu, P., and Hailey, D., The effect of an electronic health record system on nursing staff time in a nursing home: a longitudinal cohort study. *Australasian medical journal*. 7(7):285–293, 2014. doi:10.4066/AMJ.2014.2072.
18. Lear CL, Walters C Use of electronic nurse reminders to improve documentation: a process improvement for a comprehensive stroke center. CIN [epub ahead of print], 2015
19. Remus, S., Kennedy, M.A., Lucas, B.M., and Forbes, T., Nursing documentation in digital solutions. In: Hannah, K.J., Hussey, P., Kennedy, M.A., and Ball, M.J. (Eds.), *Introduction to nursing informatics*. Springer-Verlag, London, pp. 145–176, 2014.
20. Lakbala, P., and Dindarloo, K., Physicians' perception and attitude toward electronic medica record. *Springerplus*. 3(63), 2014. doi:10.1186/2193-1801-3-63.
21. Ranegger, R., Hackl, W.O., and Ammenwerth, E., Development of the Austrian nursing minimum data set (nmds-at): the third delphi round, a quantitative online survey. In: Hayn, D., Schreier, G., Ammenwerth, E., and Hoerbst, A. (Eds.), *eHealth2015 – health informatics meets eHealth*. IOS Press, Amsterdam, pp. 73–80, 2015.
22. McWay, D.C., *Legal and ethical aspects of health information management*, 4th edn. Delmar Cengage Learning, Hampshire, 2014.
23. Gawande, A., *The checklist manifesto: how to get things right*. Picador, London, 2011.
24. McGonigle, D., and Mastrian, K.G., *Nursing informatics and the foundation of knowledge*. Jones & Bartlett Learning, Boston, 2014.
25. Benedik, P., Rajkovič, U., and Šušteršič, O., Toward the design of a nursing ontology system. *Comput. Inform. Nurs*. 32(12):580–588, 2014.