Nursing Informatics
U. Gerdin et al. (Eds.)
IOS Press 1997

Nursing Informatics in Germany: Hospitals on the Track

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Background

German hospitals had to come to terms with fundamental changes in the last three years. The Health Structure Law of 1993 discarded the principle of cost-covering and introduced diagnosis related groups and competitive elements into the health care sector. Therefore each hospital feels well-advised to get a thorough recording of patient-related costs. Consequently the work done by nurses is to be measured in a more and more refined manner to get a correct picture of overall costs for a special treatment. Computer technology is seen as a tool to meet the challenges of this new development. The Agnes Karll Institute of Nursing Research (German Nurses' Association) conducted two studies (one 1994 and the other 1996)[1] in hospitals of the federal state of Hesse, Germany: the first study was to find out how far nursing informatics had been introduced into hospitals at that time and related questions. The second study two years later was a follow-up to get some insight into the dynamics of change. In the following I want to present some main results.

Methods and data base

In order to get an overview of the state of the art in hospitals detailed questionnaires were sent to all hospitals (n=182) in the Federal State of Hesse. They were addressed to the nursing directors and additionally 1994 to the shop stewards as the competent and responsible representatives of nursing and personnel interests.

The questionnaire with closed and open questions addressed themes of job organisation, nursing systems, introduction stage and planning activities concerning hard- and software on nursing wards, decisional structures, attitudes towards information technology (IT) and experiences with the new technology.

We received answers from 57.2 % of all the hospitals in 1994 and 60,5% in 1996.

Table 1: Response rates

	Questionnaires	Responses	Response Rate
Hospitals (n=182)			
1994	182	104	57,20%
1996	182	111	60,40%

The responding hospitals are representative by type and ownership, yet the larger hospitals are slightly overrepresented.

Results

Acceptance of new information technology

Already 1994 the acceptance of computers as a tool to support nursing work was high among German nurses: 78.8 per cent of all nursing directors in all hospitals of Hesse considered the introduction of information technology as urgently necessary (figure 1). Even the shop stewards, widely assumed to be very reluctant about introducing of informatics in nursing care, agreed with the statement „Introduction of IT in nursing is urgently necessary" to 71,4 per cent.

1996 this positive attitude was expressed even stronger: 83.7% of all responding nursing directors felt that the introduction of nursing informatics is urgently necessary.

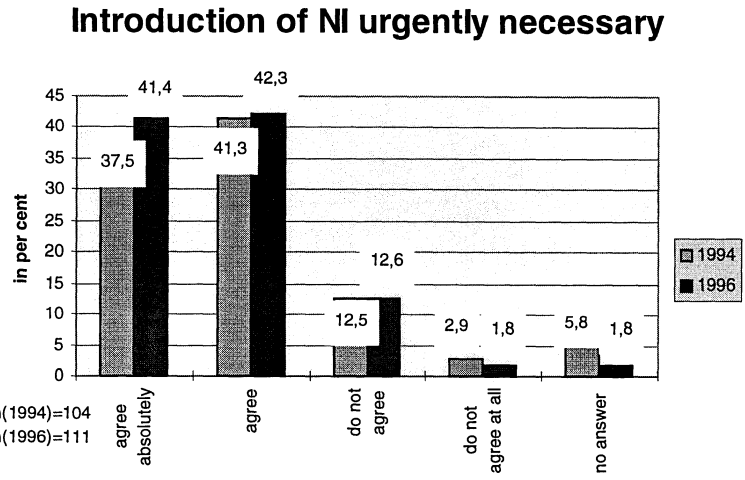

Figure 1: Nursing managers opinion on introduction of nursing informatics

Yet we have to keep in mind: it's not a love affair, it's a compulsory marriage due to new legislation in Germany. There is a high correlation between this statement and the agreement to the assertion: „New legislation forces us to employ new information processing techniques". But of course the wish to participate in the joint endeavour to modernize and professionalize the care sector seems to play a prominent role too.

Decisional structures

One organisational precondition for the introduction of hospital information systems is a well-functioning body like an IT-Workgroup of competent representatives of the different professional groups. It serves as a platform for advice and consent, for discussion, information exchange and co-ordination of specific requirements of nursing , medicine and administration. In 1994 about 40 per cent of hospitals had set up such an IT-Workgroup. Nurses were represented in only three quarters of such steering groups. But this gap is closing rapidly as the figures of 1996 show: 55,6% of all hessian hospitals now have established IT Workgroups. The nursing profession is a permanent member in nearly all of them (91,7%).

No doubt, if you wish to implement a new technology you have to put forward yourspecific requirements so that it serves your ends. For many years nurses were very reluctant about the issue. So specialists in medical informatics, business consultants, staff of controlling departments stepped in, telling the software companies what nursing is in need of. Therefore in both studies the nursing directors were asked about their contribution in putting nursing specific requirements forward for software supporting direct care (for example care planning). In both studies 79 hospitals participated. Developments in those clinics can be compared directly. While 1994 only in 22,8% of those clinics the nursing profession had formulated preconditions of IT-introduction, in 1996 already 34,2 per cent had done so. Requirements related to the nursing-specific features of software were put forward by more than 30 per cent 1996 compared to 24 per cent 1994.

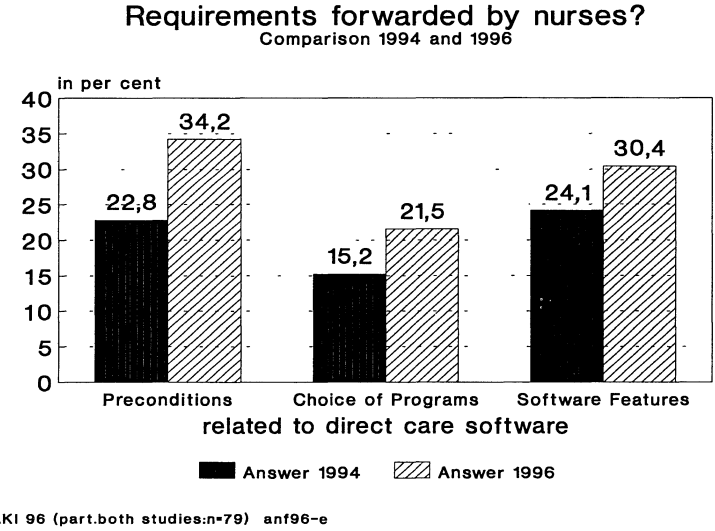

Figure 2: Formulation of specific requirements concerning NI by nurses

Nursing is much more involved in the process, as the figures show. Yet we have to bear in mind, that the fact that nurses (mainly nursing managers or computer freaks who are by the way nurses) develop requirements is not a guarantee that nursing specific aspects will be emphazised. Often technical, controlling, and time-saving issues still prevail. Requirements for rostering programmes for example comprised all those topics in a very detailed manner, but neglected systematically the issue of patient oriented nursing systems or patient assignment as a central condition for professional nursing[2] (Shukla 1982; Thomas, L.H.; Bond, S. 1991)

Stage of introduction

In both studies there is a constant group of about 31 percent of hospitals, who do not take any steps to introduce nursing informatics. A closer look at the figures reveals that smaller hospitals (up to 100 beds) are heavily over-represented in this group.

In contrast hospitals at least planning to do something about nursing informatics in 1994 shifted gradually to a testing and implementation phase in the last two years, as can be shown in *figure 3*:

Which nursing related programmes are put into use?
It was of great interest to get a picture of the kind of nursing related programmes which are implemented already as well as the stage of introduction and the speed of realisation of those plans.

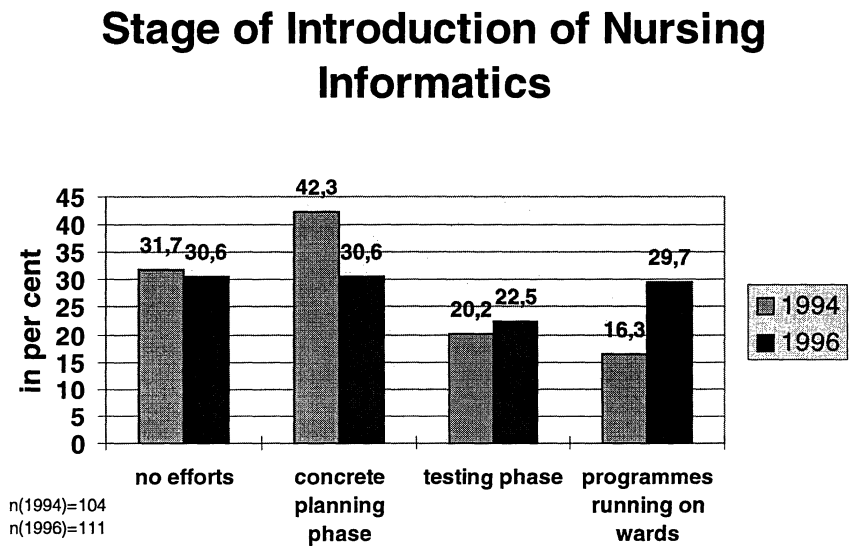

Figure 3: Stage of introduction of nursing informatics

Programs to support data gathering and analysis of patient classification, measuring the intensity of care needs, are widely in use, following legal requirements of January 1993. Workload of nurses is measured by those data.

Software to support bed allocation and supply management is ranging on place two or three. Rostering or scheduling programmes already are lagging behind. The main reason for this is, that for the above named programs there is not necessarily an integrated information system needed with networking, numerous terminals and a larger number of users. There might be only few terminals and few people, able to serve the programs, and a rudimentary form of interconnected PC's.

The infrastructural, educational but also software-related preconditions for specific nursing programs on the wards are only fulfilled by now in few clinics. Soft- and hardware, directly used by nurses on those wards for care planning or serving as communication tool between wards and administration, diagnostic departments, medical staff, central services or supplies, is rather exemption than rule. There is one well known hospital in Germany (a new built private heart clinic) working only computer based without paper.

Yet the widespread planning activities reflect those requirements . At the moment, the very cost-intensive IT-infrastructure is being built. Following this step there will be a rapid development in introducing programs of all kind directly used by nurses on the ward.

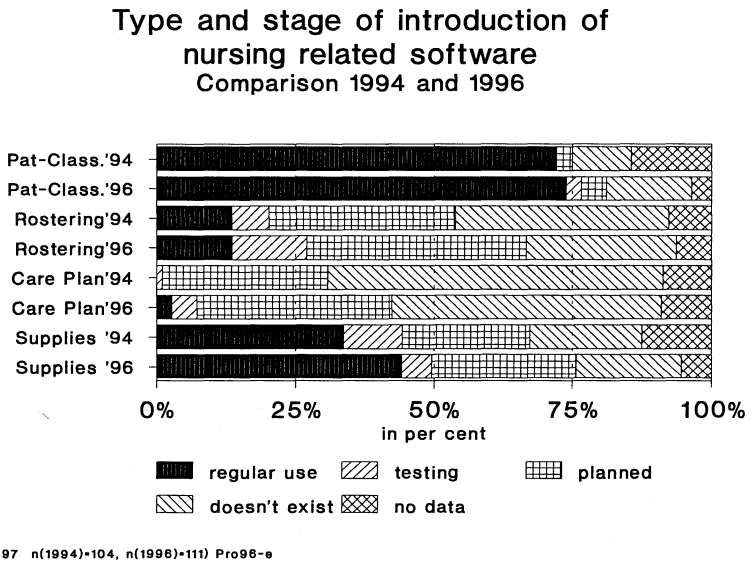

Figure 4: Nursing related software: type and stage of introduction

From a nursing point of view activities concerning the introduction of programs supporting care planning according to the nursing process are of special interest. There are only very few hospitals in Hesse testing or even using such software up till now, but about 43 per cent of all hospitals are determined to use computer support for this core activity of nurses in the near future.

Concerning computer-based care planning we witness three basic problems:

- the development of professionally adequate software proves to be difficult, extremely expensive and pains-taking for all involved due to the lack of an uniformly used nursing language yet. This language, the International Classification of Nursing Practice (ICNP) is in development, the first German translation exists, but to applicate it to practice will still take a long time
- the expert use and understanding of the nursing process and its documentation is not sufficiently developed by nurses. To implement computer-based standards and pre-formulated entries may result in standardized approaches opposite to professional efforts to enhance holistic, patient-centered care.
- another question is not posed sufficiently by now, but will be a larger topic, especially in Germany, as we witnessed already with ICD 10. What will be done with the very sensitive data collected on the wards or by nurses in general? Who will use it what for and for which interest? All of us observe a sneaking transformation of human beings into cost units in our national or company's economic calculation. In tendency nurses are responsible for the bad cost units. Are they the losers together with their clients? How can

it be assured that professional nursing and the patients themselves have access to the data, so that they really can serve the ends of quality assurance and improval of service?

Conclusion

The dominant approach in introducing computers in nursing until now is mainly directed at ressource management and cost planning. Nurses' role is endangered to be restricted to collect data. Computerization of nursing work has strong impacts on the quality of nursing and nursing organisation[3].

The clear and positive position of German nursing towards the introduction of computers on the wards bears new responsibilities: It necessitates that the profession exerts its influence on the development and the implementation process of the relevant software as well as on working conditions and educational matters in a more prominent way. Extremely important is an early clarification of aims connected with information technology: who has access to the data who shall work (why and what for) with the information collected on the wards? The controlling department? Nursing scientists, responsible for quality assurance? The nurses on the wards engaging in projects rating their own performance and outcome? The possibilities to work *by* the computer and not only *with* the computer are not discussed sufficiently until now. It is necessary to ensure that nurses have access to the aggregated data in order to engage more profoundly in quality assurance activities based on data of their own performance. It is not luxury or a mere other burden, but its a sheer necessity if nurses don't want the dangerous aspects of computer based working getting overweight: rationalisation, budget-driven and controlled care planning, i.e. the tendency that nursing degenerates more and more into a sum of single price-tagged tasks. This indeed would push nursing back into the times of task orientation[4]

The Agnes Karll Institute for Nursing Research put forward a detailled checklist for rostering programs taking into account the necessity of patient assignment to nurses. Furthermore the institute in cooperation with the German Association for Medical Informatics drafted a detailled description of specific requirements nursing information systems should meet in order not to be detrimental to the quality of care but to further the professional ends of nursing.

References

1. Höhmann, U.; Schulz, B. EDV in der Krankenpflege, Anforderungen an Dienstplanprogramme im Krankenhausbereich aus der Sicht der Pflege, Agnes Karll Institut für Pflegeforschung, DBfK-Verlag, Eschborn, 1995
2. Elkeles, T., Arbeitsorganisation in der Krankenpflege - Zur Kritik der Funktionspflege, Mabuse Verlag, 1990, Frankfurt/Main Giovanetti, P., Evaluation of Primary Nursing, *Annual Review of Nursing Research,* 4, Springer Publishing House, 1986, New York Shukla, R.K. Primary or Team Nursing? Two conditions determine the choice, *Journal of Nursing Administration,* 1982, Nov., 12-15, Thomas, L.H.; Bond, S. Outcomes of Nursing Care: The Case of Primary Nursing, *International Journal of Nursing Studies*, 1991, 28, 4, 291-314
3. Grinnell, F., Computers kill care, Nursing Standard, Nov. 3, Vol. 8, Number 7, 1993, S. 42-43
4. Grinnell, F., Computers kill care, Nursing Standard, Nov. 3, Vol. 8, Number 7, 1993, S. 42-43