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Review Article

A Learning and Innovation Network (LIN) in Nursing: Connecting Education Research and Practice

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Abstract

Introduction: Registered nurses and students of the Bachelor of Nursing are improving the quality of healthcare by working together in a Learning and Innovation Network (LIN). A LIN is a powerful learning environment, where employees and students work together towards a common goal.

Methods: In the Netherlands, Amsterdam UMC, location VUmc and Inholland University of Applied Sciences have set up a LIN on the internal medicine traumatology, oncology, cardiology and urology departments. On the LIN departments, the number of students has increased significantly. Because the students are supernumerary, space and time are created to optimize the learning process of the RNs without compromising the care to be provided. Within the LIN, students learn from the practical experience of RNs, which gives them tools to apply knowledge practically. On the other hand, students can contribute to the adaptation of long established practices, based on recently acquired knowledge. A bridge is built between acting according to recent scientific insights and experiences from practice. It is also important to take the patient's wishes into account. This guarantees nursing action based on evidence based practice and best practice. Several projects aimed at increasing the quality of care have already been carried out within the LIN such as projects focused on removing a catheter and bandaging.

Conclusion: The LIN is taking more and more shape within the VUmc. There is a broad support base between educational and healthcare institutions, both on management and executive level. In order to make the LIN activities even more attuned to the authentic development needs of the department, interprofessional learning and working should be encouraged by also enthusing other care disciplines and researchers to participate in the LIN. An EBP working group consisting of permanent team members can contribute to the safeguarding of the outcomes of the LIN projects.

Introduction

Registered nurses (RNs) and students of the Bachelor of Nursing at Inholland University of Applied Sciences in Amsterdam (the Netherlands) are improving the quality of healthcare by working together in a Learning and Innovation Network (LIN) [1]. The concept of the LIN is inspired by the idea of a healthcare innovation centre (ZIC), created and initiated by Fontys University of Applied Sciences [2]. It is a powerful learning environment, where employees and students in healthcare work together towards a common goal [3]. Learning at work contributes to the transfer of learned theory to daily work situations [4]. Therefore, a LIN is most effective when translated to the specific work field setting.

In the Netherlands, Amsterdam UMC, location VUmc (further referred to as VUmc) and Inholland University of Applied Sciences have set up a LIN on the department internal medicine in 2017,

with the intention to strengthen the collaboration. In 2019 and 2021, respectively, a LIN has also been set up on the traumatology, oncology, cardiology and urology departments. The objective formulated by Inholland and VUmc is realizing an interactive knowledge exchange, in which collective learning and active participation of students and employees are central. The LIN is led by a Lecturer Practitioner (LP) (teacher from Inholland), a senior nurse and a practical trainer from VUmc. Together, they act as mediators between education, practice and management, creating time and space for the design and implementation of the LIN. The LP of Inholland is master educated and has extensive knowledge and experience in several nursing domains. The LIN has been concretized in cooperation with the department and management of the VUmc, taking into account the possibilities of the specific department. This article will elaborate on the background of the LIN and describe some of the projects that have been carried out.

Discussion of the Topic

Background of the LIN

Research group Health and Well-being of Frail Elderly

The LIN is an initiative of the research group "Health and Well-being of Frail Elderly" of Inholland University of Applied Sciences [1]. A LIN bridges the gap between theory, practice and research [5]. It brings together education, patient care and science. The first LIN started in 2015 in district nursing with the aim of getting more students interested in care in the district. Among other things, the LP directs practice-based research within the LIN [1]. In addition, the LP also plays an important role in the implementation process of new knowledge.

Hands at the Bedside Vs. Development of the Professional Profile of the Bachelor Nurse

On the LIN departments, the number of Bachelor of Nursing students has increased significantly. Because the students are supernumerary, space and time are created to optimize the learning process of the RNs without compromising the care to be provided ('hands on the bed'). In this way, practice and education work closely together on the integration of the Bachelor of Nursing training profile, which has been in force since 2020 [6]. Students, nurses and other healthcare professionals, who are actively involved in the LIN, are not only the focus of attention in the department but are also often the initiators and driving forces within implementation processes. In this way, nurses are enabled to develop further in the various CanMEDS roles from the profile: healthcare provider, communicator, collaborator, reflective evidence based practice (EBP) professional, health advocate, organiser, professional and quality enhancer [6].

Collective Learning

Education and practice differ in the common and visible use and application of knowledge [7]. Snoeren concludes that it often seems as if healthcare practice and education do not understand each other. Snoeren bases the construction of a learning environment, shaped by education and practice, on Eraut's theory [8]. "Learning is shaped primarily by meeting and learning from others and by challenges presented by the work itself [2]. Within the LIN, students learn from the practical experience of RNs, which gives them tools to apply knowledge practically. On the other hand, students can contribute to the adaptation of long established practices, based on recently acquired knowledge. A bridge is built between acting according to recent insights, recorded in scientific literature, and experiences from practice. It is also important to take the patient's wishes into account. This guarantees nursing action based on EBP and best practice (BP) [9]. Within the VUmc, EBP working groups are active where RNs are facilitated to participate in (nursing) research. Projects are carried out within the LIN. Participation in a LIN project can be a nice step towards participation in the EBP working group. Projects initiated by the LIN can be further developed in the EBP working group and the other way around, the EBP working group can request support from the LIN. For example, by involving the LIN in data collection. The LIN will also be involved in ongoing studies initiated by the VUmc. The LP plays a central role in this, by making connections between the different knowledge sources and valuing, using and eventually integrating them in an equal way [7].

LIN: a Co-Production of Inholland and VUmc

Participants

Every twenty weeks, a new group of nursing students starts at four VUmc departments (traumatology, oncology, internal medicine, urology and cardiology). Per department, an average of six to eight nursing students are placed, with a mix of younger and older students. At least two RNs participate in each LIN. These can be either novice or experienced nurses. There is an open communication between the supervisors in the department, the practice trainer and the LP from Inholland University of Applied Sciences. The lines of communication are short because the LP attends the department every week. It is then easier to switch between them, for instance concerning the progress of the students' learning process. Students from other universities of applied sciences and secondary vocational education (SVE) also join the LIN. SVE students are often very practical and from this perspective they actively contribute to the identification of knowledge needs in the department. By participating in the LIN, SVE students gain additional knowledge about EBP.

Integrated Education within the LIN

The LP is responsible for providing the theory lessons, which are supportive to the internship of the students and the role the students fulfil within the LIN. These lessons are integrated by the LP in three main themes: clinical reasoning (peer review), research skills (initiating and participating in scientific research) and intervision & moral reflection (reflecting and ethical dilemmas). The three themes cover the seven CanMEDS roles [6]. The lessons make use of case histories from actual practice, both patient-related and work-related. In this way, the LP also keeps its eyes on

the department, as it were, and the need for specific knowledge and skills can be identified in good time and addressed in the education. Students and RNs are enthusiastic about this because a link is always made between theory and practice. Relevant practical problems are discussed together and agreements are made on how to tackle these problems. This creates group cohesion and activates the reciprocal collective learning process ('binding and binding'). The LP also regularly organizes workshops on research skills for RNs, in cooperation with the practice educators. Training in these skills contributes to the further development of the CanMEDS role: 'reflective EBP professional'.

Quality Improvement

Interactive knowledge exchange is central in the LIN. This should ultimately lead to quality improvement of patient care. It is essential that both students and RNs are active in the LIN. This is realized by forming pairs between students and nurses. The students are responsible for informing the nurses on a regular basis about projects that are carried out within the LIN. Short presentations about current projects will also be given during coffee time or a joint training session. Topics for quality improvement are identified by nurses or other disciplines in the department (bottom-up) and then presented to the LIN participants. This means that the topics of the LIN are always based on the needs of practice to stimulate broad support. This strives for a shared responsibility in realizing and safeguarding the proposed quality improvement. The focus of the LIN projects is often on the three pillars of EBP, but there is also room for developing other quality proposals. For example, a LIN previously played an important role in the implementation of the new privacy legislation: the General Data Protection Regulation (AVG). Other care disciplines were also involved. For example, a nutritionist was involved in a practical study into fluid balance and an internist and a junior doctoral student were involved in a sleep study [10]. When a quality proposal exceeds twenty weeks (presence of a group of students), the subject can be continued by the new group of students. As the registered nurses 'stay on', progress is guaranteed by this 'roof tile construction'. This also reduces the risk of falling back into old routines [11]. The following section describes four projects carried out within the LIN.

Projects

Removing a Catheter

Nurses identified the clinical uncertainty of whether it is necessary to remove a bladder catheter in the middle of the night (immediately after the doctor's order), or whether it would be possible to wait for a time that is more practical for nurses. The literature review showed that the timing of catheter removal should be balanced between avoiding an increased risk of infection versus circumventing micturition. This should take into account patient-specific factors [12, 13]. The patients indicated that they would rather not be woken up in the night for this. They preferred to remove a catheter in the early morning. The nurses also preferred not to wake the patient for this because it could be a trigger for delirium. In addition, the nurses indicated that, for practical reasons, the morning is the most appropriate time as there are more doctors available then. Ultimately, it was decided to remove bladder catheters at 06:00 a.m. After all, the EBP triangle consists not only of the pillar scientific literature but also of the knowledge and experience of the professional and the wishes, values and preferences of the patient [9].

Fall Prevention Interventions

The nurses indicated a need for additional fall prevention interventions. The use of a bed sensor was suggested. To this end, contact was made with the geriatrics department of the VUmc. It appeared from this contact that within the VUmc a fall prevention study is being conducted in which a certain type of bed sensor is used. The wish was to initiate a second control group in which another type of bed sensor was tested. The researchers involved have therefore invited the LIN participants to play a role in collecting data of the second type of bed sensor. In case the decision was made to introduce one of these two types of bed sensors in the department in question, a next LIN can focus on its implementation.

Bandaging

The LIN in the Department of Internal Medicine conducted research into the nursing treatment of bandages. More than half of the nurses and students showed a need for a bandage protocol in order to achieve an unambiguous and safe way of working, thus reducing the risk of complications. When consulting the venous pathology guideline, it became apparent that care is needed when bandaging because 30% of the total number of patients suffer from arterial insufficiency [14]. According to the guideline, an ankle brachial index (ABI) should therefore always be measured, using pressure gauges. In addition, it appears that bandaging is often ineffective because after one day there is a 50% loss of pressure and the bandages sag [14]. The nurses in the department are familiar with the theory of ABI, but they do not feel competent to perform this procedure. This is because this skill is not included in the skills training of the nursing course and is also not offered in the refresher courses organized by the healthcare institutions. Scientific research indicates that training in bandaging should be provided by an expert who regularly performs this action in practice [15]. Therefore, it is not recommended that bandaging be included as a standard component in the skills teaching of nursing education. This is because not every educational institution can meet these requirements. The results of the study have led to the skills lab at the VUmc now providing practical training that includes ABI as a component. A protocol for bandaging has also been drawn up on the basis of this study.

Sleep Study

Patients regularly report to the nurses that they experience a poor quality of sleep [10-16]. Therefore, the LIN set up the following research question: 'Which factors hinder the sleep of patients at the VUmc Department of Internal Medicine'? Via

literature research an article was found, written by researchers at the VUmc [17]. Subsequently, LIN participants met with these researchers. This led to the researchers initiating a sub-study for which the students collected the data. The sub-study focused on the discrepancy between the patient's own perception of the quality of the sleep pattern versus the nurse's observation and reporting. The names of the involved LIN students have also been included in the acknowledgements of the intended publication in a medical professional journal [10]. In the evaluation of the LIN, a student stated: 'Participating in this research has given us insight in how to set up a good questionnaire, how to question someone correctly and how important it is to communicate well with each other, the department and the researchers. We also noticed how difficult it can be to fill in a questionnaire when there are various factors that can hinder data collection, such as work pressure.'

Conclusions

The LIN is taking more and more shape within the VUmc. There is a broad support base between educational and healthcare institutions, both on management and executive level. Passionate initiators, who together possess the necessary knowledge and experience, are important success factors in this. To successfully continue this concept, at least one EBP expert must be available within the departmental team to support students and team members in conducting research, including a literature study. Short lines are also needed between the educational and healthcare institutions. In this context, it is important that a preferably all-round master's degree trained nursing instructor is present in the department for a set number of hours. In order to make the LIN activities even more attuned to the authentic development needs of the department, interprofessional learning and working should be encouraged by also enthusing other care disciplines and researchers, including people in training, to participate in the LIN. An EBP working group consisting of permanent team members can contribute to the safeguarding of the outcomes of the LIN projects.

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