

# Moving forward in a role as a researcher: the effect of a research method course on nurses' research activity

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## Summary

- The aim of this study was to investigate whether a 1-year research course in basic research methodology, designed for clinical nurses, had a positive effect on the nurses' own research activity and their commitment to research in general.
- The research method applied was use of semistructured interviews. Seventy-nine clinical nurses participated in the study. Students of the research course ( $n = 37$ ), i.e. the study group, were compared with a group of clinical nurses who did not participate in the course ( $n = 42$ ), i.e. the reference group.
- A statistically significant difference was found in several variables between the two groups. Eighty-nine per cent of the study group members were active in planning their own research projects compared with 35.7% in the reference group. The study group also showed a higher level of interest and commitment to research results of others and read English language articles. A total of 13.9% of the study group experienced being unable to find time during working hours to participate in research projects, while this was true for 50% of nurses in the reference group.
- Experiences from the research course in basic methodology show that educational programmes designed for clinical nurses may facilitate and support their own research efforts as well as enhance their commitment to research in general. The course reinforced nurses' self-confidence in research-based practice. Clinical nurses require personal initiative, perseverance and competence in

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research methodology as well as sensitization towards a research culture in order to move away from the salaried work of a practitioner and into the role of a researcher.

*Keywords:* basic research methodology, clinical nurses, commitment., comparison, research activity, research course, semistructured interviews.

## Introduction

Nurses' work has changed over the past decade. Since the early 1990s, clinical nursing has been marked by new technological developments in information systems as well as by new treatments. The demand for flexibility and evidence is present in individual patient situations and affects nurses' clinical observations, decision making and actions. In Denmark this is particularly the case, not least because the policy requires that health-related actions provided to its citizens must be research based (The National Strategy Committee for Health Research, 1995; Pedersen, 1997; Danish Medical Research Council, 1999; Ministry of Research and Information Technology, 1999). Current policy statements also state that clinical nurses of the future will assume more medical tasks (Ministry of Health, 2001). This accentuates the need for clinical nurses to acquire essential research methodology qualifications, not only with a view to implementing research results but also to implement research independently within their own practice.

## Background

### LITERATURE REVIEW

Research-based nursing practice was instigated in the USA and UK during the early 1990s (Wilson-Barnett *et al.*, 1990; Tierney & Taylor, 1991; Mulhall, 1995). According to Thompson *et al.* (2001) developments in the UK led to 'the evolution of an evidence-based culture of health service delivery' (p. 377). The question is no longer whether nursing should rest on a research-based foundation but rather how nurses' clinical decision making and actions can become research based.

Across countries and different health care systems, nurses and decision-makers are discussing the extent to which clinical nursing research can be facilitated (Edwards-Beckett, 1990; Kim, 1994; Meleis, 1997; Fitzpatrick, 1998; Adamsen, 2000). Various studies focus on the extent to which nurses in practice can be supported in research utilization and these have, amongst other considerations, documented that clinical nurses do not

have the time to read research articles, find reading of research articles difficult, and lack the skills to evaluate the research findings published in scientific journals (Funk *et al.*, 1991; Dunn *et al.*, 1997; Kajermo *et al.*, 1998; Retsas & Nolan, 1999). Generally, there is agreement that research utilization requires both organizational and educational efforts (Dyson, 1997; Retsas, 2000; Kajermo *et al.*, 2001).

Three studies are mentioned below which investigate the influence of education on clinical nurses' attitudes towards research. Rodgers investigated the influence of education on research utilization amongst 680 charge and staff nurses in Scotland and concluded that an association could be found between having a higher level of education and research utilization (Rodgers, 2000a, p. 279). Pearcey (1995) found that nurses who attended research courses had a more positive attitude towards research and felt that they were better able to use research to improve care. Similarly, Lacey (1996) showed that use of research by clinical nurses in practice increased after they had attended research courses. The results from these studies show that there is a need for concrete and goal-orientated educational interventions to facilitate research-based clinical practice. However, a limited number of studies have elucidated the importance of educational programmes such as research courses for clinical nurses' own research activity.

Contrary to the USA, UK, Sweden and Australia, significant studies about research utilization in clinical practice have not been carried out to date in Denmark (Funk *et al.*, 1991; Dunn *et al.*, 1997; Kajermo *et al.*, 1998; Retsas & Nolan, 1999). Similarly, it was only in 1999–2000 that research methodology was introduced as a course in the basic education of nurses in Denmark (The Danish Ministry of Education, 2001), whereas such developments have been described in several cross-country studies (Mander, 1988; Ackerman, 1997; Leino-Kilpi & Suominen, 1998; Ax & Kincade, 2001). Additionally, it is only in recent years that Danish Master's level programmes have been established, which offer competence in research methodology (Ministry of Health, 1994; Adamsen *et al.*, 1995; The Danish Ministry of Education, 1998). It can therefore be stated that no Danish clinical nurses have received research training as an integral part

of their formal curriculum and the majority of nurses who today work in clinical practice do not have formal or reliable research-related qualifications.

On this basis, we developed a 1-year course in basic research methodology and critical scientific reflection. The course was developed by four researchers from the University Hospital's Centre for Nursing and Care Research (including LA and KL). In total, 227 clinical nurses have to date completed the course, which was initiated in 1996. As well as regular written evaluations during the course, students from the 1999/2000 cohort were asked to participate in this study. This article presents these clinical nurses' viewpoints about their own research activity and their experiences with research commitment in general. With the aim of providing information about whether the course had a research-stimulating function for participants, we compared participants with clinical nurses who did not participate in the course.

### The educational programme: a 1-year research course

The 1-year course in basic research methodology is specially designed for Registered Nurses who have not reached Master's level but who have several years of clinical experience in one or more specialities. Each year, 42 students are enrolled, the majority of whom are nurses, but typically two midwives and two physiotherapists are invited to join the course. The aim of the course is to enable students to plan a research project with a view to later implementing it in their clinical practice. It is a requirement to prepare a project proposal/protocol.

The research course is organized as a part-time activity. Formal classes last 8 hours daily and are held on 1 day every third week. In total, there are 19 days of classroom work; 120 hour of lectures; 2400 pages of required reading (including literature in Danish and English language textbooks on research methodology); exercises in, for example, interview techniques and developing questionnaires, presentation techniques, and defence of the project proposals.

The course is cross-scientifically anchored, with contents in scientific theory (theories of social, humanistic, public health and nursing care), literature searches, critical literature reading, basic statistics, the research process, quantitative and qualitative research methods, the researcher's role, research ethics, forms of publishing research, and evaluation and implementation strategies. The course finishes with students' written and verbal presentations of their project proposals, comprising aim, background,

literature reviews, design, research methods, framework for analysis, ethical and implementation considerations and a timetable. Experienced researchers act as examiners. The course teachers are generally at PhD level (e.g. sociologists, nurses, doctors, statisticians, librarians) and are active in research. A minimum of 3 hours of guidance is provided to each student by one of the course teachers. Teaching is conducted in a critical and problem-orientated pedagogic fashion. The course is the only one of its kind in Denmark.

## Methodology

### DESIGN

This study has an exploratory and descriptive design. It is part of a larger study of Scandinavian nursing theorists' and clinical nurses' reflections and experience with the production and use of research theory and findings.

### RESEARCH QUESTIONS

The study focused on the following questions:

- 1 Can a 1-year course in basic research methodology stimulate research activity and commitment amongst clinical nurses?
- 2 Are course students' research activities and viewpoints regarding research and research culture different from a group of clinical nurses who have not participated in the course?

### SUBJECTS AND RECRUITMENT

Eighty-four nurses were requested to participate in the study. Amongst the 42 participants who initially started the course, two left because of pregnancy/maternity leave and a further three declined to be interviewed because of a perceived lack of time. Seventy-nine Registered Nurses, who worked full-time in clinical practice, participated in the study. The nurses were recruited from 30 hospitals and a broad spectrum of clinical specialities. Study participants were divided into two groups. *Sample 1*: typical case sampling involving 37 clinical nurses who attended the research course in 1999/2000 originally recruited from 10 hospitals in the capital area. These nurses were considered as the study group. *Sample 2*: a reference group of 42 clinical nurses who did not participate in the course. The nurses were recruited from different counties and 20 different hospitals from outside the capital area. A request for participation was made to a non-specified head nurse from any medical or surgical

unit, who subsequently was requested to identify a nurse in their unit on duty that day who would accept to be interviewed.

The reason why members of the reference group were not selected from the same hospitals was because our research institute was involved with other activities (e.g. research projects, teaching and counselling) with some of the clinical nurses from the 10 hospitals in the capital area. Their previous acquaintance with the researchers may have influenced the answers provided in this investigation.

### *Demographical characteristics*

The nursing population profile, by demographical factors, was as follows:  $n = 79$ ; sex: 78 women, one man; mean age: 42 years, with a range from 26 to 58 years; mean number of years of education: 18 years, with a range from 2 to 36 years; mean number of years in the speciality: 10.6 years, with a range from 0 to 30 years. Comparison between the study and reference groups showed acceptable equivalency and there was no significant difference between the groups with respect to mean number of years since formal education (17 vs. 19), mean number of years in clinical practice (10 vs. 11), and mean age between the two groups (43 vs. 42).

### DATA COLLECTION AND PROCEDURE

Interviews were conducted on the basis of a semistructured interview guide consisting of 55 questions that were pilot-tested prior to use. Two-thirds of the possible responses were limited to a dichotomous answer 'yes/no' or 'agree/disagree'. The remaining one-third of questions were designed for open-ended responses, thus inviting qualitative statements. Interviews focused on the following themes: The nurse's viewpoint and experience with (1) planning and developing a research project; (2) use of evidence-based knowledge; (3) barriers; and (4) future plans. Each interview lasted 40–60 minutes.

The interviews took place with the study group members during a course day 2 weeks prior to finishing the course and were carried out by a research assistant (LB) who was unknown to the students. The rationale for this was to avoid bias. Interviews with the reference group members were carried out by telephone.

### DATA ANALYSIS

The quantifiable interview data were entered into SPSS statistical software program (SPSS Inc., Chicago, IL, USA) and screened for errors. This control was under-

taken usually in the first instance, i.e. when data were entered from each form, and subsequently by selecting a 10% sample, following data entry of all interview responses. The test found no errors of either a random or systematic character. The completed data set formed the basis from which frequency and cross-tabulation tables were prepared. From the information provided by the frequency tables, the main features in the response pattern became apparent. A specific statistical analysis of the differences in the data was prepared with the help of cross-tabulation tables and statistical testing (chi-square test, with a 95% certainty level).

The qualitative statements in the interviews were analysed as in-depth interviews of the nurses' experience with and viewpoints on evidence-based knowledge, barriers and future plans, and interviewees were requested to substantiate their responses by providing concrete examples. These data were then thematically categorized and systematized. We used investigator triangulation in order to minimize bias (Polit & Hungler, 1999). The presentation uses selective quotations to illustrate trends found in the interview material.

### ETHICAL CONSIDERATIONS

The nurses were informed verbally about the purpose of the study and were subsequently asked to decide whether or not to participate. Questions put to nurses exclusively concerned their knowledge about research. No person-specific identifiable data were collected. They were informed that all responses would be treated confidentially and anonymously. The research project was undertaken in accordance with guidelines of the Danish Ethics Committee. However, as the study was not of a biomedical experimental nature, permission from the Committee was not needed.

### Results

#### COMPARISON OF COURSE STUDENTS' RESEARCH COMMITMENT WITH THAT OF THE NON-COURSE STUDENTS

Table 1 presents the questions for which statistically significant differences in data were seen between the study and reference groups.

A total of 89.2% of the study group reported actively working on a research project, as did 35.7% of the reference group. In contrast to the reference group, the study group showed a higher degree of orientation towards international research results, in that more requested that

**Table 1** Research activity and research commitment. Statistically significant differences between study and reference groups (Questions answered affirmatively)

Question	Study group (%) ( <i>n</i> = 37)	Reference group (%) ( <i>n</i> = 42)	<i>P</i> -value
Are you currently working on a research project?	89.2	35.7	<0.001
Do you read research articles in foreign literature?	89.2	45	<0.001
I cannot find the time during daily working hours to participate in a research project	13.9	50	<0.001
I do not want to use my leisure time to do nursing research	8.1	39	<0.001
I would like to become better acquainted with research results presented from other countries, which could inspire me	100	78.6	0.003
I prefer English language articles as they are more interesting than the Danish ones	29.7	7.7	0.013
I would like to become better acquainted with research results of others as it is important for my professional development	100	87.2	0.024

research results be presented and preferred English language articles (29.7% vs. 7.7%). In the study group 13.9% could not find the time during daily working hours to become involved in a research project, while this was true for 50% of the reference group. Furthermore, 8.1% of the study group was unwilling to use their leisure time to undertake nursing research, while this was true for 39% of the reference group. With regard to foreign literature, 29.7% of the study group preferred English language articles, compared with 7.7% from the reference group. The study group (100%) desired to become better acquainted with the research results of others as these were seen as important for professional development. This was true for 87.2% of the reference group.

#### USE OF EVIDENCE-BASED KNOWLEDGE

In response to the question, 'Do you use evidence-based nursing care knowledge in your unit?'; 69% confirmed that they did and there was no statistically significant difference in the answers of the groups. The most commonly mentioned examples related to basic nursing care issues such as feeding, oral hygiene, catheter care, stoma care, skin care, wound care prevention and pain relief. With respect to speciality-specific problems, the following were named: care of stroke patients, postoperative care of heart patients, patients with back pain and patients with hip fractures, etc. Those not using evidence-based knowledge had three typical reasons for abstaining, i.e. lack of time, interest and qualifications: 'It takes time to find evidence literature and it takes skills to assess the articles'. The nurses explained that 'the term "evidence-based nursing care" is not yet known' and said that, 'Many are unaware of how to search for evidence and articles are not read' and 'We talk a lot about it but we have not moved forward with the concept'.

#### RESEARCH COURSE STUDENTS STILL LACK RESEARCH SKILLS

The study group (*n* = 37) was requested to state the most significant barriers they had experienced while developing their research projects. One barrier was their insufficient research-related competencies and the need to develop further skills in research methods. Preparing project proposals was not a simple task: 'It is still difficult to prepare a project proposal; I don't have all the tools I need.' Another important barrier observed in 44% of the research course students was that they lacked personal support from their superiors, as the following quotation indicates: 'There is a lack of understanding and insight by the unit head about my research work. Many other tasks are imposed on me and I have to put my research project aside. I am able to work on it mainly in my leisure time.' In addition, 43% of those in the study group experienced resistance and jealousy from nurse colleagues in their units, thus complicating and delaying research projects. One nurse highlighted 'I hoped for professional debate and interest from both my unit head and my own colleagues but I did not find this, even though the aim was to implement the research project afterwards in our practice'.

#### FUTURE PLANS FOR RESEARCH COURSE STUDENTS

The nurses were asked about the impact of their participation in the research course on their future professional plans. Ninety-five per cent responded that it gave them the stimulus to pursue further research projects, 89% expected to implement the results of their projects in their respective units, 72% wished to publish their results and more than half (67%) would ask

physicians to collaborate in an interdisciplinary research project. Sixty-three per cent of the students stated that they were planning further education in research at Master's level. Five (13%) confirmed during the research course that research was not a part of their future vision and had therefore not submitted project proposals.

## Discussion

### TEACHING METHODOLOGY AND SENSITIZING TOWARDS THE RESEARCHER ROLE

The study shows a difference between the two groups of clinical nurses. The research course students were, to a larger extent than their colleagues, prepared to develop research projects and to find the time needed for research. They were also open to acquiring knowledge from international research literature. The majority of those who started the research course were in a position to finish it (39 out of 42) and of these, 32 prepared project proposals. On this basis, we believe that the 1-year course had the desired research support function.

The differences between the study and the reference groups can be explained by the following factors:

- 1 *The recruitment procedure*, i.e. students' interest in research, in advance of the course, and the fact that they voluntarily sought admission to the course;
- 2 *The intervention*, i.e. the content and construction of the course, which was offered in the form of teaching and guidance to students; and
- 3 *The social dynamics*, i.e. the gain that was made from the social context in which students were together throughout the year while attending the course.

These factors, we believe, can have a decisive influence on commitment as well as on personal investment (research during leisure time, overtime at work), which nurses in the study group demonstrated.

Another problem concerns the conditions associated with carrying out research. To be ready to assume researcher behaviour (to read, write, discuss and raise objections), which radically breaks away from the traditional work of clinical nurses, it is necessary to be introduced to a research-based culture. This transformation from practitioner to part-time researcher happens when nurses find themselves in a group of peers, which was the case with this course.

In relation to the course, the need for research was made visible and the conditions for research became apparent to individuals and to the entire group, implying that through open exchange of experiences they could support each other. This development is in line with

Rodgers's (2000a) conclusion that clinical nurses in Scotland experienced more concrete gains from a research course than from study days.

### SELF-CONFIDENCE PAVES THE WAY TO INCREASED RESEARCH COMMITMENT

Nurses in the study group gained professional knowledge as well as learning about their own limitations in research. Insight into research terminology, and the principal rules of the game associated with committing to research, allowed them to recognize that they were not yet trained researchers. They recognized the complexity of research and that there was much to learn. We consider this desire for further knowledge absorption as a positive sign. We therefore find, contrary to Perkins (1992; p. 257), that the research course led to increased motivation and skills and not to anxiety: 'The anxiety created by research, particularly by its terminology and association with statistics that are fearsome to many nurses.'

### OPTIMISTIC INTENTIONS

The study group's future plans are hypothetical and we do not currently have data to inform on the extent to which optimistic intentions to start new research projects, to implement/publish ongoing projects or to invite multi-disciplinary research work will be achieved. It is interesting that Lacey's (1996) evaluation of a research course in the UK showed that 65% of students answered that there was full or partial research utilization. The investigation was carried out amongst participating nurses 6 months after the course. A similar trend confirming research utilization was found in a study by Parahoo (1999) involving 1368 nurses in the UK.

### EVIDENCE: TRENDY AND UNAVOIDABLE

The examples discussed show that research-based knowledge is primarily used within traditional areas of nursing responsibility and focus on patients' basic needs (e.g. oral health, skin care, stoma care) for which clinical guidelines are developed. There are some possible explanations for this. Firstly, the available research knowledge is presented in a form which seems appropriate for direct implementation in clinical practice. Secondly, the examples concern nurses' own areas of responsibility and therefore there is no need for change in the existing competency structure – nurses can simply change their practice to be evidence based. Finally, in the examples given, a clinically controlled design is used, which is a recognized approach

within the medical field and which facilitates implementation. Contrary to the nursing care orientation in this study, a UK study shows that 'the guidelines and technologies often represented the medical component of procedures while the nursing element was often absent' (Thompson *et al.*, 2001; p. 380).

We noticed that there are very few examples of using evidence-based knowledge with patients suffering from psycho social problems. One possible explanation for this is that research in this area requires other theoretical and research skills, which clinical nurses do not have, whether or not they participate in a 1-year research course. In addition, existing psycho social research (psychologists, sociologists) in Denmark does not seem to have the same impact and direct clinical use as somatic-orientated research for doctors and nurses. In addition, the hospital culture in Denmark is not very open to other professional groups and subject areas and is typically unfamiliar with scientific approaches and other academic disciplines. Also, those who give permission for research to be carried out (e.g. trade unions, scientific bodies, international professional organizations and the media) discuss and demand health policy interventions that are research based (International Council of Nurses, 2001). Evidence is 'trendy' but it is also largely an understood and unavoidable demand to which nurses must adhere.

#### VALIDITY

Data used in the study are considered to be of good quality, with only a few missing responses. The data collection procedure included face-to-face interviewing and telephone interviews and yielded a high response rate (95%). The fact that telephone interviewees and those interviewed 'face-to-face' were asked to respond to questions regarding their own daily professional circumstances, as opposed to discussing their personal beliefs and attitudes, confirmed our choice of using telephone interviewing as an acceptable mode for respondents residing outside the capital area.

The fact that two different methods were used for data collection process is a possible criticism. de Vaus (1991) and Wilson *et al.* (1998) underscore the importance of the interview guide's design and the communication skills of the interviewers. If very complex questions are raised, telephone respondents become confused and experience difficulty in answering the questions and this in turn would affect the validity of the investigation. However, our interview guide had a simple design, comprising a large number of questions requiring dichotomous answers

and did not require any preparatory work by the respondent prior to the interview.

The difference between the two data collection methods is explained by the interview process itself. Telephone interviews gave fewer possibilities of reaffirming the answers supplied (e.g. through body language) and so did not allow the interviewer to grasp the concrete context. Wilson *et al.* (1998) highlight 'the need for good verbal communication skills in telephone work to compensate for lack of visual information' (p. 317). The four interviewers in our telephone investigation had several years' experience with 'face-to-face' interviews and two (LA, JKM) had used the telephone interview technique in earlier investigations, prior to which they were trained in verbal communication.

The interviews were carried out within a time span recommended by the literature in order to avoid respondent fatigue (de Vaus, 1991; Wilson *et al.*, 1998). No difference was found between the two forms of interviewing with respect to the frequency of difficulty faced by the respondent in understanding the questions or in the number and character of examples given between the two forms of interviewing.

We cannot overlook the fact that those who were interviewed 'face-to-face' were more knowledgeable about our viewpoints regarding research engagement in clinical practice and thus provided more socially desirable answers than those who were interviewed by telephone. In an effort to reduce this bias, we, as teachers of the course, opted not to become involved in the 'face-to-face' interviews.

With regard to validity, the following question arose: Do the nurses have a sufficient experiential basis upon which to answer the questions? Their experience in clinical practice was on average 10 years, with a minimum of 2 years following qualification. There were no significant differences between the two groups with respect to demographical variables. Nurses' experiences of the content of the research course were sufficient as the interviews took place 2 weeks before the end of the course. Monitoring the validity of self-reported data during the interviews was only possible in relation to the study group and we did not find examples of incorrect information.

Typical case sampling was used to select sample 1. The intention was to secure participants who were representative of what is typical or average. Only the research course students could provide information on the research course and its possible research supportive function. We used confirming and annulling case sampling to select sample 2, in that we examined whether clinical nurses

would develop research activity and commitment despite non-attendance on the course (Polit & Hungler, 1999).

As we developed and organized the 1-year research course, we were not in a position to assume a neutral and balanced judgement of the course participants' aims in participating. We used the reference group solely for the purpose of mirroring the study group and not for generalization about Danish clinical nurses. Comparison between the two groups strengthened the study's credibility.

#### LIMITATIONS

The study and reference groups basically shared the same demographical characteristics (i.e. age, number of years following education, number of years practising within a speciality). Although the sampling procedure for the reference group was intended to reflect and contain geographical and clinical speciality differences, they are not statistically representative comparison samples. Further significant differences could therefore possibly be found between the two groups should a larger population drawn into the study.

With respect to the reference group, we were not able to check the extent to which the research activities they spoke of were correct and this is a limitation. Parahoo (1999) and Rodgers (2000b) equally point to the fact that there are limitations in validity when analysing nurses' research utilization if the data are exclusively self-reported, because nurses will have a tendency to reply positively about research utilization. Despite this, we consider that the interview data constitute an adequate basis for the conclusions we have drawn.

#### Conclusions

The study showed that a 1-year course in basic research methodology, designed for clinical nurses, facilitated their interest in research to the point where they were able to develop their own research projects for eventual implementation in their clinical areas. By comparing a group of nurses from the research course with a group who did not participate, we found statistically significant differences in relation to personal research activity and general research commitment. The course reinforced the self-confidence of clinical nurses in research-based practice. The study also confirmed tendencies from international research literature, that evidence-based nursing in Denmark is both an expression of today's trends as well as a societal requirement.

Educational research programmes can support research-interested clinical nurses. However, taking initiative,

commitment and sustainability are also called for, as well as further education in order to shift from being a practitioner to a researcher and being sensitized to a research culture.

#### CLINICAL IMPLICATIONS AND FUTURE RESEARCH

The study shows that the students, at the end of the 1-year research course, had optimistic future plans. We are not in a position to provide data on the extent to which their intentions were realized. We are, however, aware that some course participants did move forward with implementing their projects, some took up opportunities for further education and some have published their project results. Theoretical and methodological skills are needed, but these are not enough to achieve research-based nursing practice. This will call for further knowledge about clinical research, i.e. decision making and implementation theory, as well as sensitization towards a research culture before individual nurses can be transformed from practitioners to researchers. These will be some of the challenges in educational efforts in clinical nursing practice.

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