Diabetes research reported by nurses in Nordic countries

M Graue,[1,2] PhD, RN
MM Iversen,[1,3] PhD, RN
ÁK Sigurdardottir,[4] PhD, RN
V Zoffmann,[5] PhD, MPH, RN
B Smide,[6] PhD, RN
J Leksell,[6] PhD, RN

[1]Centre for Evidence-Based Practice, Bergen University College, Bergen, Norway
[2]Department of Pediatrics, Haukeland University Hospital, Bergen, Norway
[3]Department of Medicine, Section of Endocrinology, Stavanger University Hospital, Stavanger, Norway
[4]Department of Health Sciences, University of Akureyri, Akureyri, Iceland
[5]Steno Diabetes Centre, Gentofte, Denmark
[6]Department of Medical Sciences, Uppsala University, Uppsala, Sweden

Correspondence to: Marit Graue, Bergen University College, Centre for Evidence-Based Practice, Postbox 7030, N-5020 Bergen, Norway; email: marit.graue@hib.no

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Summary

New knowledge from research studies is important as a foundation for high-quality care in practice as well as crucial to further stimulate research in the future.

The aims of this study were to determine the total number of peer-reviewed articles on diabetes research reported by nurses in four Nordic countries (Denmark, Iceland, Norway and Sweden) from 1979–2009, and to identify the time periods in which they had been published, different study designs and the number of publications related to nurse authors.

We performed an electronic search for potentially relevant scientific articles between 1 January 1979 and 31 December 2009 using the MEDLINE, Medline in process, EMBASE, CINAHL, PsycINFO and Cochrane databases. The studies focused either on the diabetes population or on diabetes health care professionals.

We included 164 scientific articles; 132 resulting from electronic search and 32 from manual search. They were published in 63 different scientific journals, with 52 (32%) published in nursing journals and typically by authors with university degrees. Only one in four authors had published five or more articles. The majority of the studies originated from a single country, with 23 (14%) including co-authors from another country.

It was concluded that research in diabetes reported by nurses has increased considerably after the year 2000. Further action is needed to build stronger national groups of researchers. International collaborative research networks facilitate funding opportunities and contribute to further development of professional research competence.

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Key words

academic skills; diabetes; evidence-based practice; nursing; professional role; research capacity

Introduction

The dramatic increase in the prevalence of diabetes worldwide represents a major challenge to the ability of health care services to provide appropriate diabetes care in the future.[1] In order to provide high-quality care, nurses need to be updated on research studies within the field and to be able to critically assess the findings. The literature is a way of disseminating new knowledge from research studies to clinicians. Nurses are increasingly expected to be equipped with the skills to understand the research process, and to base their professional practice on emerging evidence from research.[2,3]

Research designed to guide nursing practice and to improve the health and quality of life of patients is defined as clinical nursing research.[4] Furthermore, Moule and Goodman[5] describe the area of nursing research as having an interest in 'what patients and clients feel and experience, how nurses learn and develop throughout their careers, how multidisciplinary working and learning contribute to the care of patients, and the outcomes of nursing practice'. Over the years, the nursing profession has progressed in developing academic competence but has also struggled in building a mass of competent researchers and in developing successful research career pathways.[6] Opportunities for nurses to conduct research studies at the master's and doctoral levels are essential to promote a research-based culture for practice.[7] In the Nordic countries, studies in nursing at the doctoral level were integrated into higher education in the late 1970s and early 1980s.[8,9]

Building a sound reputation for research studies in clinical nursing in the future will benefit from identifying important core factors from the past. Thus, we designed a study to retrieve scientific articles on diabetes research reported by nurses to describe the development in four Nordic countries during 30 years.

Aims of the study

The main objective of the study was to determine the total number of scientific articles on diabetes research reported by nurses in Denmark, Iceland, Norway and Sweden, from 1979–2009. Furthermore, we wanted to identify the time periods in which they had been published, different study designs and

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the number of publications related to nurse authors. We wanted to identify key elements that might have facilitated or hampered nurses' ability to contribute to building knowledge within diabetes and professional research competence.

Methods

We performed an electronic search between 1 January 1979 and 31 December 2009 (Denmark, Iceland and Norway) or between 1 January 1979 and 24 November 2009 (Sweden) using the MEDLINE, Medline in process, EMBASE (from 1980), CINAHL (from 1981), PsycINFO and Cochrane databases. The search strategy was developed using both Medical Subject Headings (MeSH) and free-text terms likely to appear in the title, abstract or full-text of the literature. The search history included the following keywords: diabet*, nurs*, norw* swed*, denmark*, danish* iceland*. Furthermore, behavioural, psychosocial and educational research terms that are typically areas of research in clinical practice were included as keywords – care, coping, adaptation, behavior, behavior mechanisms, patient education, patient satisfaction and quality of life – and used in combination with the Boolean operators AND or OR.

We included scientific articles based on the following criteria: research studies reported by nurses in four Nordic countries (Denmark, Iceland, Norway and Sweden), published in peer-reviewed journals in the period from 1979 to 2009. Retrieved scientific articles were reviewed by two authors independently (Denmark: VZ and MMI; Iceland: AKS and MMI; Norway: MG and MMI; and Sweden: JL and MMI). When the reviewers disagreed on the selection of articles, the research group achieved consensus through discussions. In total, we identified 6701 articles by electronic searches (Figure 1). We excluded 6064 of these and 505 duplicates. Thus we included 132 scientific articles from the electronic search, and 32 additional articles identified by manual search: reading the citation lists of the retrieved papers and by discussing with experts in the field.

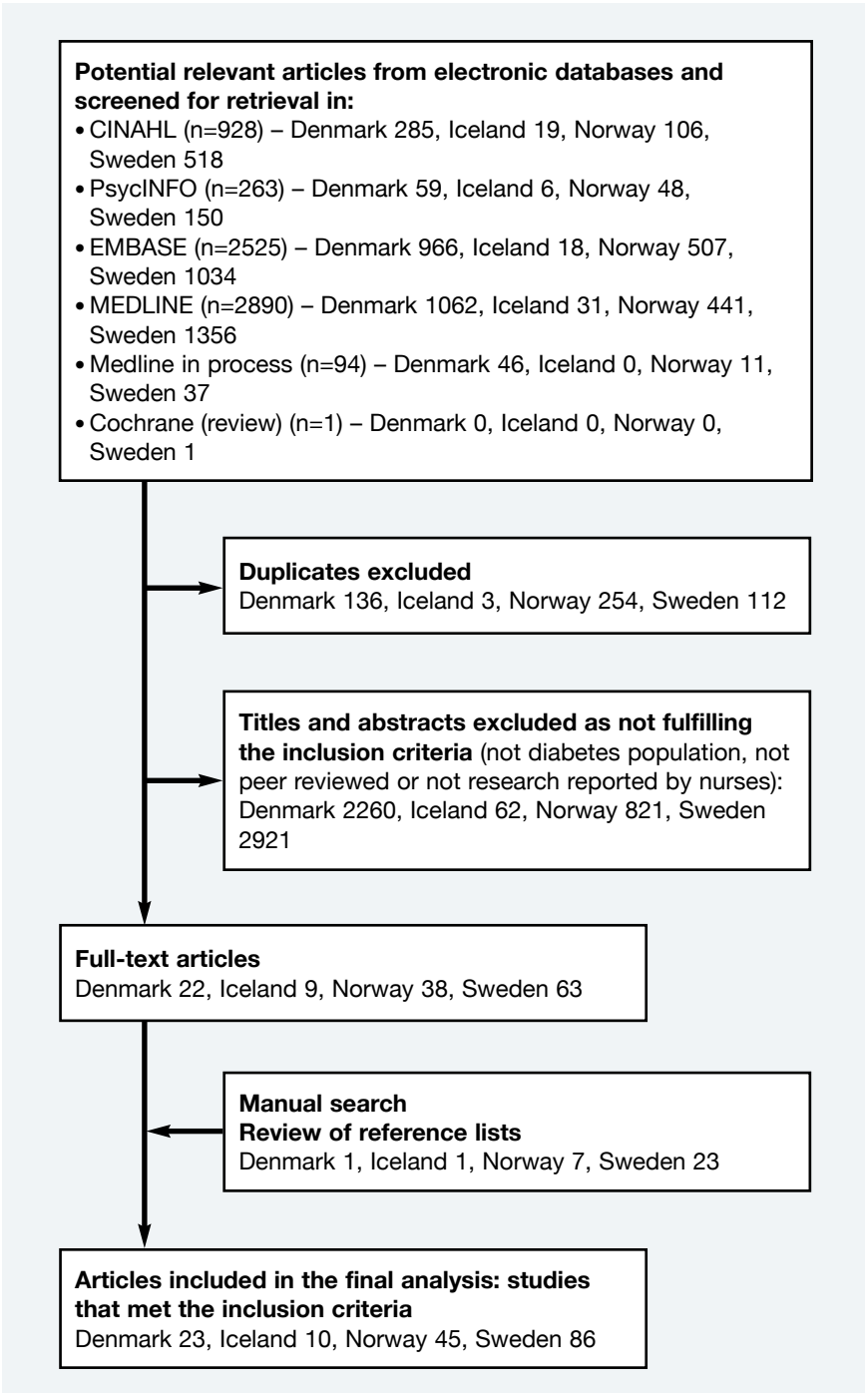

Figure 1. Flow diagram (selection process for studies included in analysis); (n=164)

Study selection

We included peer-reviewed scientific articles published in English,

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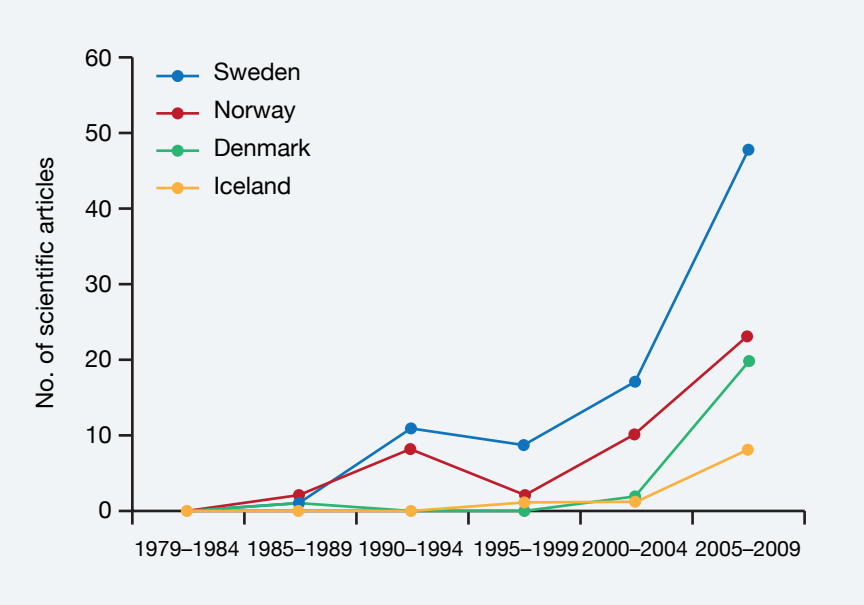

Figure 2. Number of scientific articles from each of the four countries in 5-year intervals, 1979–2009 (n=164)

Danish, Icelandic, Norwegian or Swedish, with nurses among the authors as main or co-authors. All of the other authors were also identified by their profession in order to determine international and multidisciplinary co-authorship. The studies had to be related either to the diabetes population, in which participants were adults as well as children or spouses, or to diabetes health care professionals.

Data extraction

We extracted information on number of articles from each country, the time periods in which they had been published and the range of journals the authors had used. Peer reviewed journals that had the word 'nurse' or 'nursing' in the journal's official name were categorised as nursing journals, whereas all other scientific journals were categorised as multidisciplinary or medical journals. Further, we extracted information on study designs (cross-sectional or descriptive studies, non-randomised and randomised controlled trials, qualitative studies and theoretical or methodological approaches and reviews), and co-authorship (national versus international, multidisciplinary versus only nurses, academic versus clinical nurse affiliation or joint positions [academic and clinical affiliation for the same person]). As it has been the convention to put the chief investigator as last author, information on the number of authors as last authors was also selected.

Results

The number of publications from each country

Of a total amount of 164 scientific articles, 52% were from Sweden (n=86), 28% from Norway (n=45), 14% from Denmark (n=23) and 6% from Iceland (n=10) (Figure 2). As shown in Figure 2, the number of publications in Sweden and Norway began to rise in the 1990s, whereas Denmark and Iceland did not publish a substantial number of articles until after 2000. Most of the studies in all countries were published during the past five years, with 99 articles (60%) published during 2005–2009.

The 164 articles were published in 63 different scientific journals, with 52 (32%) published in nursing journals and 112 (68%) published in multidisciplinary or medical journals (Table 1). The countries differed with 13% of the articles from Denmark published in nursing journals, compared to 50% from Iceland. Furthermore, 50 (30%) had been published in journals with an impact factor (in 2009) higher than 2.

Different study designs

Most of the studies used a cross-sectional or descriptive study design (n=71): reporting on results from studies related to people's experiences of living with diabetes using existing self-reported outcome measures, or studies reporting on empirical testing of the psychometric properties of standardised reliable and valid international instruments that had been translated from English into Danish, Icelandic, Norwegian or Swedish. Also, one study reported on the development of a new instrument. We identified: 22 non-randomised studies (cohort studies [retrospective or prospective]), controlled before-and-after studies and case series (uncontrolled longitudinal studies); and 14 randomised controlled clinical trials focusing on different aspects or components of psychosocial or educational interventions and approaches to facilitate self-management. Eight articles either reflected on theoretical or methodological approaches or were reviews. Qualitative research methods were used in 49 studies, including a variety of methods: meaning condensation, thematic analysis and phenomenological, phenomenological-hermeneutical and grounded theory. The qualitative studies gave in-depth knowledge regarding experiences of patients, health care providers, and patient-nurse dyads.

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Characteristics of scientific articles	Denmark n=23	Iceland n=10	Norway n=45	Sweden n=86	Total n=164
No. of scientific articles in type of journals					
– Multidisciplinary or medical journals	20 (87%)	5 (50%)	34 (76%)	53 (62%)	112 (68%)
– Nursing journals	3 (13%)	5 (50%)	11 (24%)	33 (38%)	52 (32%)
Impact factor of scientific articles (≥2)	4 (17%)	0	13 (29%)	33 (38%)	50 (30%)
Total no. of contributing authors	12	5	18	42	77
– No. of authors with ≥5 published articles	3 (25%)	1 (20%)	5 (28%)	8 (19%)	17 (22%)
No. of scientific articles with:					
– Nurses as the first author	19 (83%)	9 (90%)	35 (78%)	69 (80%)	132 (81%)
– Nurses as the last author	5 (22%)	4 (40%)	15 (33%)	44 (51%)	68 (41%)
Co-authorship (no. of scientific articles)					
– International co-authorship	9 (39%)	0	6 (13%)	8 (9%)	23 (14%)
– Multidisciplinary co-authorship	19 (83%)	5 (50%)	36 (80%)	57 (66%)	117 (71%)
– Both academic and clinical nurse co-authorship	0	2	2	4	8
– Nurse authors in a joint position (both clinical and academic affiliation)	0	0	1	1	2
Contributing author's position (no. of scientific articles)					
– Academic position (at a university or university college as a researcher or research fellow)	21	13	49	33	116
– Assistant professor of nursing at a university college (MSc)	0	0	3	2	5
– Diabetes nurse specialist or clinical nurse (or significant clinical leader)	10	2	15	7	34

Table 1. Type of scientific journals, authorships and position of the contributing nursing authors (n=164)

The number of publications related to nurse authors

Few nurses within each country made many contributions; approximately one fourth had published five or more articles. Of the 42 authors from Sweden, 8 had published five articles or more (19%), in Norway 5 of 18 authors (28%), in Denmark 3 of 12 authors (25%) and in Iceland 1 of 5 (20%) had published five or more articles. A nurse was the first author in 132 of the 164 scientific articles, whereas 68 articles had a nurse as the last author, and 117 articles had multidisciplinary co-authorship (Table 1). The co-authors were mostly physicians working in diabetes in each country, statisticians working in hospitals or universities, psychologists, nutritionists or dental hygienists, in that order. Most studies originated from a single country, with 23 of 164 articles (14%) including co-authors from another country. Further, co-authorship with academic and clinical nurses (in the same publication) and scientific articles that had nurse authors in joint positions (affiliated with both a hospital and a university or university college) were uncommon (Table 1).

Discussion

This study showed an increase in the number of scientific articles reported by nurses in the Nordic countries after the year 2000. In order to draw on the experience from the past to further stimulate high-quality research in the future we discuss the following challenges: (1) building a mass of competent researchers, and (2) the course of action to be taken to set the future research agenda.

Building a mass of competent researchers

The development of academic skills within nursing depends on the availability of university-level courses promoting a research-based culture among the students.[7] As shown in the results section, developing a mass of competent researchers has taken a long time. Although the opportunities to attend university courses improved throughout the 20th century, few nurses had the skills or capacity to perform research studies until after 2000.

Differing circumstances in the four countries might have influenced the pace of progress. In Iceland, a university nursing programme was established in 1973 based on a model from Canada and the United States.[10] Nevertheless, the first registered nurse (RN)

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doctorate was earned in 1992.[10] In Sweden, the reform of higher education (Vård 77) for registered nurses in Sweden was implemented in 1977. This facilitated nursing as an academic discipline enabling nurses to perform doctoral studies, yet without nurses as supervisors. In 1992, the Higher Education Act enabled nurses not only to perform studies at a doctoral level, but also to function as supervisors. In Norway, the University of Bergen was the first university to offer academic nursing studies (established in 1984), with Oslo University and the University of Tromsø following within a few years. In Denmark, nursing science was included as an academic discipline within the Faculty of Medicine at Aarhus University in 1991, and finally established as an independent department in 2001.

According to Segrott and colleges,[11] creating infrastructure, fostering research cultures and environments, and facilitating training and collaboration are key elements of developing nursing research capacity. We have shown that increases in the number of publications coincided timely with the establishment of scientific education and the move of nurse education into higher education institutions in the 1990s, as well as funding opportunities in each country. Both in Sweden and Norway, hardworking pioneers in diabetes research have been able to raise substantial funding which has paved the way for this development. A programme funded by the Norwegian Research Council in the 1990s, with the aim of strengthening nursing science, contributed to the development of diabetes research in Norway. In Sweden, the Diabetes Association has played a significant role by funding a considerable number of PhD students. Also, in Norway the Diabetes Association has played an active part in supporting nurses. This is in contrast to the conditions in Denmark and Iceland where the research has not been supported by any large grants. In all of the Nordic countries, the nursing associations have played a modest role in fostering research cultures.

During the past two decades, a growing number of nurses in clinical practice have been recruited to facilitate research studies and clinical trials initiated by physicians.[12] These nurses might not have been strongly encouraged to go on to a research career on their own. Among the 164 scientific articles presented here, few papers had co-authorship including nurses who had both clinical and academic affiliations, indicating a joint position or a combined role between research and clinical activities. Nevertheless, they have enhanced their expertise on trial coordination, recruitment and compliance with protocols. More education needs to be provided promoting the building of clinical research capacity, as well as facilitating the growth of combined roles for nurses in the clinic. Research exploring nurses' views on factors that constrain them from taking up opportunities to get involved in research studies is described elsewhere,[13] as are the findings of a critical overview of the challenges and strategies in developing nursing research capacity in academic departments.[11] Management and leadership issues are essential to develop this further. Efforts to foster high-quality national research cultures and environments as well as stronger international collaborative research networks should be on the agenda.[3] Attention has to be given to research funding opportunities as lack of funding affects the direction and development of research nurses undertake as well as influences the types of studies.

The course of action to be taken to set the future research agenda

Despite the growing interest in conducting well-designed research studies in nursing, the theoretical and methodological development and degree of autonomy in nursing research are still weak.[14] One possible explanation is that the nursing academic environment in the Nordic countries generally has a brief tradition of research, especially within diabetes. As shown in Table 1, only 22% of the authors had published five or more articles. This is further supported by the fact that many nurses had only published articles from one project (Table 1). Moreover, we have shown that only 23 (14%) of the scientific articles included co-authorship from another country. Autonomy needs to be strengthened in the future. Historically, physicians have dominated the research literature compared with research from other health disciplines. Research founded mostly on medical concepts, and diagnostic and treatment perspectives need to be complemented with research studies more directly related to a clinical nursing perspective. Given the level of nursing research in the four Nordic countries to date, more rigorous national studies need to be done. Nurses need to generate new research questions more closely linked to knowledge gaps in clinical practice.[15]

During the period 1979–2009, we identified few randomised controlled studies, and few authors had moved research further by conducting more than one project. This is an important finding, since a main challenge for diabetes research in the future is to generate research with great impact on practice by using previous research to build further knowledge within the field. More research is needed on developing and testing interventions and approaches in clinical practice to

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establish an evidence base on what works, in what ways and under what circumstances. According to Richards and Borglin,[16] nursing researchers are encouraged to embrace the complexity of nursing into their research method thinking, and to generate research questions and research programmes for nursing to better meet the core concerns of health care in the future. To ensure high-quality research, the importance of an approach with mixed methods is emphasised.

Conclusion

As the growing workforce with academic skills has expanded in the Nordic countries, nurses' professional roles have been broadened and include not only a role as educators and providers of best practice care and treatment but also a role as researchers. However, to fulfil knowledge gaps in practice, action is needed to build stronger national groups of competent researchers in the Nordic countries. Moreover, international collaborative research networks facilitate funding opportunities and contribute to further development of professional research competence.

Declaration of interests

There are no conflicts of interest declared.

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Book review

Insulin therapy: a pocket guide

By Mark WJ Strachan and Brian M Frier
Published by Springer, 2013
82 pages, price £25.64
ISBN: 978 1 4471 4759 6

The vast majority of patients with diabetes receive effective ongoing care and monitoring in primary care. Within this setting across the UK, there is huge variation in the level of monitoring or initiation of insulin taking place in primary care despite most initiation being commenced in the community. A large number of patients with type 1 diabetes may not engage with the specialist diabetes team and, with the development of clinical commissioning groups who will be inclined to explore the most cost-effective way of managing patients, the publication of this book is timely.

This book is aimed not only at clinicians within primary care with a special interest in diabetes who may well be involved in managing patients with insulin, but also for junior hospital doctors and diabetic nurse specialists. The book is, as the title suggests, pocket sized and extremely concise, restricted to seven chapters.

The first chapter on physiology and the metabolic action, along with milestones in the development of insulin, helps the reader understand better the insulins and regimens currently used and covered in chapter two. The variety of pens, devices and pumps in use, how to initiate and adjust therapy as well as the importance of education are covered. The chapter on hypoglycaemia is important for all clinicians but a significant part covering infusions, perioperative care and the management of diabetic ketoacidosis is more for hospital staff.

Dr Alan Begg, General Practitioner and Honorary Senior Lecturer, Townhead, Links Health Centre, Montrose, UK

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