

Nurse-Lead postdoctoral nurses fellows' experiences with a leadership and mentoring program: a qualitative study

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Abstract

Background: Globally, postdoctoral nurses experience difficulties building sustainable careers because of limited numbers of academic positions and lack of leadership. Studies conducted in North America have shown that leadership and mentoring programs can support postdoctoral nurses in strengthening a sustainable career in nursing research. The European Nurse-Lead online program was developed to strengthen leadership, professional development and required competences. It is unknown what the influence is of this program on leadership, professional development and academic competences of European postdoctoral nurses.

Objective: To explore the experiences of the fellows with the Nurse-Lead program, as well as the influence on leadership behaviour, professional development and required competences.

Method: This study used a qualitative design, in which the experiences of the fellows were explored by conducting semi-structured interviews. Data was analysed using thematic analysis.

Results: Twelve interviews were conducted with fellows from five European countries. Three themes illustrated they experienced improved leadership skills and knowledge. The program had a positive influence on leading teams and establishing research programs. Some experienced positive change on work balance and improved strategic skills, such as applying for funding grants. The flexibility of the online course was described as a strength, but also as a challenge to prioritize the program over other work activities.

Conclusion: The Nurse-Lead program is valuable for postdoctoral nurses and had positive influence on leadership, professional development and various academic competences to develop a sustainable career. Leadership and mentoring programs are highly important and can contribute to clear academic pathways and improve quality of patient care.

Implications: More research is needed to explore the long-term influence of such programs on nursing research, education and clinical practice. Moreover, to substantiate the influence for European postdoctoral nurses more European countries should be included.

Key words: postdoctoral nurses, professional development, leadership.

Samenvatting

Achtergrond: Wereldwijd ervaren gepromoveerde verpleegkundigen moeilijkheden in het ontwikkelen van een duurzame carrière door gebrek aan academische posities en leiderschap. Studies uit Noord-Amerika tonen aan dat leiderschap en mentor programma's hen kan ondersteunen in het versterken van een carrière in onderzoek. Het Europese Nurse-Lead programma was ontwikkeld om gepromoveerde verpleegkundigen te ondersteunen in leiderschap, professionele ontwikkeling en academische competenties. Het is onbekend wat de invloed van het programma is op leiderschap, professionele ontwikkeling en academische competenties voor gepromoveerde verpleegkundigen.

Doel: Exploreren van de ervaringen van gepromoveerde verpleegkundigen die het Nurse-Lead programma hebben gevolgd en de invloed van het programma op leiderschap, professionele ontwikkeling en academische competenties.

Methode: Deze studie heeft een kwalitatief design gebruikt met semigestructureerde interviews en thematische analyse.

Resultaten: Twaalf interviews zijn uitgevoerd met deelnemers uit vijf Europese landen. Drie thema's illustreren dat zij verbeterde leiderschap vaardigheden en kennis ervaarden. Het programma had een positieve invloed op het leiden van teams en het oprichten van onderzoeksprogramma's. Sommigen ervaarden verandering in hun werkbalans en verbeterde strategische vaardigheden, zoals aanvragen van onderzoeksgelden. De kracht van het programma was de flexibiliteit van de online-cursus, maar dit was ook een uitdaging om het programma boven de andere werkzaamheden te prioriteren.

Conclusie: Het Nurse-Lead programma is waardevol en had een positieve invloed op leiderschap, professionele ontwikkeling en verschillende academische vaardigheden om een duurzame carrière te ontwikkelen. Leiderschap en mentor programma's zijn erg belangrijk en kunnen bijdragen aan duidelijke carrière paden en hiermee de kwaliteit van onderzoek en patiëntenzorg verbeteren.

Implicaties: Meer onderzoek is nodig om de invloed op lange termijn van vergelijkbare programma's op verpleegkundig onderzoek, educatie en klinische praktijk te exploreren. Bovendien moeten er meer Europese landen deelnemen, om de invloed van leiderschap en mentor programma's op gepromoveerde verpleegkundigen op Europees-breed niveau te onderzoeken.

Trefwoorden: postdoctorale verpleegkundigen, professionele ontwikkeling, leiderschap.

Introduction

The global situation of the nursing profession is complex. Healthcare needs to change due to growing life expectancy, increased patient complexity and more medical possibilities because of new technologies(1–3). At the moment, the world is confronted with the COVID-19 crisis, calling for radical transformation of healthcare(4,5). Nurses are essential to meet the growing demands and are required to provide high quality and safe patient care(3,6,7). The existing healthcare requires nurses with strong leadership skills to develop new knowledge and turn this into clinical practice(2,5,6,8). This generates greater need for nursing research and well-educated nursing workforce with masters or doctoral degrees(2,9–12). Studies have shown that well-educated nurses have positive effects on patient outcomes, such as lower mortality rates and better patient satisfaction(9,12,13).

Although nursing research is important in supporting the healthcare changes, the infrastructure for nursing research is limited in many countries(2,10). Postdoctoral nurses (PN), who are experts in research and generate and translate new knowledge into clinical practice, generally work in nursing research, education and clinical practice(14). For PN there are limited career pathways and academic positions, resulting in limited research time and difficulties in obtaining research funding(2,11,14). To develop a sustainable career, PN need to have fundamental required academic competencies in research management and connect with healthcare professionals to improve quality of patient care and strengthening undergraduate nursing education(2,10,14). In addition, there are few adequate positions for PN and therefore professional development is lacking, which is important to build research careers. Professional development is defined as advancing ourselves as professionals, including continuing to develop throughout working lives(15). Lack of professional development may result in underuse of skills and perspectives of PN(2,10,11).

Studies have shown that leadership can support PN to develop professionally(2,11). Leadership is defined as the process whereby an individual influences a group to achieve common goals(16). Continuing to develop as PN is experienced as challenging, because they combine different part-time positions in research, education and clinical practice(14). PN need strong leadership skills to deal with the conflicting demands in different positions(14). Although leadership of nurses working in clinical practice is associated with improved patient and healthcare outcomes, there is a lack of studies investigating the impact of leadership for PN(2,17,18).

With regard to this concern, leadership and mentoring programs were developed to support PN, however they were generally conducted in the United States(3,19–22). Mentoring is often used to strengthen leadership and academic career development of nurses(19,23). Mentoring is defined as a transactional process to transmit information, advice, support and expertise from an experienced to a less-experienced individual(24). There is growing evidence

that mentoring improves research productivity, work culture, nurses' confidence, leadership knowledge and skills to improve patient outcomes such as patient safety(3,19–21,23,25,26).

Although leadership and mentoring programs have a positive influence on PN and nursing research, there are limited numbers of leadership and mentoring programs in Europe and thorough evaluations are lacking(2). To address this concern, The Nursing Leadership Educational Program (Nurse-Lead) is developed for European PN and Doctoral Nursing Students (DNS) (27). The aim of the online program is to improve leadership and build sustainable careers, strengthen performances in various positions in research, education and clinical practice and become visible leaders. So far, it has not been investigated how the fellows have experienced participation in the Nurse-Lead program, as well as the influence of the program on leadership, professional development and required academic competences.

Objective

To explore the experiences of Nurse-Lead fellows with the program, and the influence on leadership, professional development and required academic competences to develop a sustainable career in research.

Method

Study design

This study used a qualitative design, which enables to explore the experiences and understand the perspectives of individuals following the Nurse-Lead program(28,29). The content of the program is described (Insert Table 1). The study was conducted between January to June 2020 in six countries participating in the program which included the Netherlands, Iceland, Finland, Germany, Lithuania and Portugal.

Population and domain

The population of interest consisted of European PN and the study population consisted of PN who participated in the Nurse-lead program. Experiences of DNS will be explored in another separate study. PN could apply for participation in the program if they had a PhD degree in nursing, spoke English and worked in research at a Nursing Science department at Universities or University Medical Centres. Totally 21 PN involved in the Nurse-Lead program, were eligible for this study. PN were purposively sampled on age, gender, nationality and progress in the course for maximum variation in the study population to obtain broad understanding of their experiences(28,30).

Data collection

Semi-structured online interviews were conducted between March and May 2020 to let the participants talk freely and ensured the researcher to get all information required (KvE)(30). Literature based interview guide was developed and used in all interviews, which included the experiences of PN focusing on leadership(2,11,17,22), professional development(7,15,31,32) and required competences(2,6,8,10) (Appendix 1). The interviews included open questions, inviting the participants to openly communicate their views and experiences, started with the question "What was your motivation to start the program?" Followed by questions on how they described leadership and how the program influenced their leadership, required competences, professional and career development. The interview guide was tested during two pilot interviews and no changes were made. Data collection ended when data saturation was reached, indicating that everything of importance was emerged from the data obtained(30). Demographic data on age, gender, years of PhD-degree, academic function, type of organization, nationality and activity in online learning units in the program was collected before the interview.

Study procedures

Participants committed to take part in this study, when applying for inclusion in the Nurse-Lead program. Participants were identified by the researcher (LvD), using pre-existing databases and were invited by the researcher (KvE) to participate with the study information via e-mail. If the participants agreed with participation, they were asked to submit demographic information to achieve maximum variation and interviews were scheduled. Interviews were audiotaped and conducted via Zoom program through online video communication(33). Written memos about the participants' thoughts and nonverbal expressions were made during interviews(30). Researcher (TBH) participated in the first four interviews to provide support. The data collection and analysis process was iterative, meaning that researchers went back and forth from collection to analysis and back again(30). Member check was done by sending a summary of the transcripts to the participants through e-mail, to enhance trustworthiness(28).

Data analysis

Data was analysed using thematic analysis according to Braun and Clark(34). Thematic analysis was chosen since this study aims to explore the main statements that truly reflect the participants' experiences (Insert Table 2). The researcher team (KvE, TBH, LvD) started with familiarizing with the data by (re)reading transcripts. Two researchers (KvE, LvD) independently coded data based on relevance to the study objective and both were along the same lines. Member checking tightened the transcripts and strengthened data interpretation. Themes were identified after coding interviews, based on similarity in codes. Formulation of codes and themes was discussed often in the research team and was based on consensus. The created themes were reviewed by checking whether themes fit in relation to the coded extracts and the complete dataset. Constant comparison was used to review and refine the themes and all themes were related back to the study objective before writing the final report. Nvivo (QSR International, Melbourne) was used to manage, analyze and store data(35). The consolidated criteria for reporting qualitative research (COREQ) was followed(36).

Ethical issues

This study was conducted according to the principles of Declaration of Helsinki (version 59, October 2008)(37). Quality check was performed at the University Medical Centre Utrecht (UMCU) and the Medical Ethical Committee of UMCU, concluded that this study does not fall under the Medical Research Involving Human Subjects Act (WMO) (protocol number 20-164)(38). Thorough written and verbal information was provided before the start of the study. The participants and researcher signed informed consent prior to the interviews.

Findings

Baseline characteristics

Twenty-one PN were approached for participation and twelve PN were included in the sample. The sample comprised two men and ten women with median age of 47 years, from Iceland (1), Germany (2), the Netherlands (4), Portugal (3) and Finland (2). Participants worked in different positions such as professor, researcher or combining research and education. Interview durations ranged from 50 minutes to 97 minutes. Participant baseline characteristics are displayed (Insert Table 3).

The findings identified three themes: *'Change in leadership'*, *'Change in professional development'* and *'Satisfaction with the Nurse-Lead program'*. (Insert Table 4)

Theme 1: 'Change in leadership'

'Changed view on leadership'

Uncertainty about leadership competences and about taking risks in their careers was experienced by most of the participants. Leading teams was described as uncomfortable and some experienced difficulties coping with many personalities and different team positions. They stated that the foundation for leadership perspectives and knowledge was lacking. After the program all PN described their leadership perspectives have changed and experienced improved leadership knowledge and skills. They described leadership as more structured and gained theoretical background to refer to.

'When I have this theoretically foundation about leadership it helps me to apply it. I can look for it and make necessary changes.' (P9).

'Leading teams'

Before starting the program, the PN described they struggled with leading research teams. They described how the program helped them to see their team in different ways and how important it was to acknowledge and recognize the different qualities each team member possessed. The PN described how the program supported them to use teamwork skills to create a better working environment for team members. They experienced more awareness of using different qualities of team members, however leading teams remained difficult for most PN.

'It is a thing (leading teams), that I don't deal well in the past and I don't deal well now. It is a thing I changed a lot, the way I see, feel and think about that. The commitment on the goal we have, everybody is different.' (P1)

'Leading research programs'

The PN gained new skills from the program to better manage and coordinate research programs. Some PN pursued branding of own work to better establish research programs. The program created awareness on the importance of branding and how branding could be used in practice, for example by creating a logo and being more recognizable. They described improved skills to better implement research findings into clinical practice and education by having research questions from practice and vice versa.

'The program made me aware that branding is an important aspect and I have started this. In my own institute I am the only one with a logo.' (P9).

'Leading collaborations'

International collaborations were developed during the program by some PN. They described becoming more inspired to not only conduct research in their own workplace but also to seek further international partnerships. Changed perspectives on doing research internationally was experienced by some PN and others already had international collaborations. They experienced improved quality of research by sharing databases and comparing results in different countries.

'I realized that I am locked up in our little region...I learned to get new ideas and be in contact with the outside world. It is a desert if you are always working in your small world.' (P6).

Theme 2: 'Change in professional development'

'Professional development plan'

Before the program, many PN lacked structured ways to further develop their professional career in research and struggled to have a clear vision for the future. Developing a professional development plan, which was part of the program, was experienced as a structured tool for developing their research career in nursing. Specifically, because they needed to think about future goals and ambitions and how to achieve them by formulating concrete actions. One participant described this in the following way:

'I really valued the professional development plan. It makes you think about what you want to do...It is a structured method to think about my professional development, like a tool.' (P10)

'Becoming more confident'

The participants experienced more self-confidence as they described being more secure towards their own leadership skills and sharing ideas with others. Some PN stated they were more conscious of their own behavior and described themselves as being more visible within the organization. However, speaking out and being visible was still experienced as challenging and difficult to implement in practice for some PN.

'Confidence is also an insight of the program, like I am doing it okay, it was like a mirror to me and I am always critical on myself.' (P4)

'It remains hard for me (being visible), to say: hey look what I am doing!' (P3)

'Becoming more strategic'

During the program, some PN became more equipped to make strategic decisions about their research program. Mentorship was beneficial in developing political and strategic skills since they could learn from experiences of the mentors. Some PN felt more confident in applying those skills in the organization such as applying for grant funding. For many PN applying for grants remained challenging, however the program influenced the PN as they have more knowledge on how to apply for grants and found new innovative ways to get grants.

'The program opened up possibilities on applying for grants, but to apply this in practice is difficult, it is more an awareness.' (P12)

'I discussed this with my mentor...he shared new innovative ways to apply for grants that helped me.' (P3)

'Finding work balance'

Finding balance between work and private life was challenging for all PN. They experienced high work pressure as they combine different positions in research, education and management. After the program, some PN described being more in the lead to balance work better and prioritize work activities in a more structured way. Although most PN described they became more conscious of the importance of work balance, balancing remained difficult to apply in daily practice and was described as something that needed continued attention in the future. One participant said:

'I have to admit it is difficult...I make a plan on what I can do now and what can I do later...But it is difficult, and when we had to do the assignment on structuring our work better, that really helped.' (P8).

'Taking steps in the career'

The program gave PN insight into their own performances as they described this as having a clearer vision of their personal goals, career opportunities and managing their research careers. Greater understanding of their position within the organization was defined by some participants. Throughout the program, few PN changed roles because they felt comfortable and more secure in applying for new positions. These PN were more open to new job opportunities inside and outside their organization due to increased awareness of career opportunities. One PN described this as:

'For this role of being editor for this journal...I think that the program encouraged me to apply for this position.' (P2).

Theme 3: 'Satisfaction with the Nurse-Lead program'

'Value of the online program and the international perspective'

All participant experienced the program as valuable, because the program was online. They appreciated the flexibility of the program as it provided many ways to develop leadership skills, self-reflection and support in their professional careers. Also, the face-to-face meeting was described as interesting and beneficial in their personal growth, due to the interaction with the other fellows with different international perspectives. The program's international character was experienced as a strength and gave PN many perspectives about where their work holds a global role.

Prioritizing the program above of all other tasks was challenging and time management of the program was difficult for most PN. This may have contributed to delays during the program. In addition, the interaction on the online platform was described as rather superficial, as they all relied on the responses of each other.

'The strength of the program is also the challenge of the program. Strength is that you can do it in your own time, you can schedule it yourself...But this is the challenge, because you have to give it priority.' (P3)

'The value of mentoring'

Access to mentoring was experienced as a strength of the program, as it offered practical and psychological support. Practical support was received including how to deal and communicate with other team members and how to apply for grants. Some PN described receiving psychological support as the mentor was a critical companion who facilitated reflection on behaviors and actions. They experienced improved self-reflection and felt more comfortable having a positive influence on others. Mentoring was essential for PN to reflect on their career development and opportunities from different angles. Some PN described difficulties to find mutual time with the mentor and experienced mentoring as challenging.

'He was more like psychological mentor.....more to help me understand and realize why I do certain things I do.' (P2)

'I got a mentor and because of the time zone and busy schedules it was very difficult to find mutual timing.' (P12).

Discussion

This study identified three themes: *'Change in leadership'*, *'Change in professional development'* and *'Satisfaction with the Nurse-Lead program'*. The findings showed that the program is valuable for PN and had positive influence on leadership, establishing research programs and academic competences to develop a sustainable career.

The findings presented in the *Theme: 'Change in leadership'* described how PN were doubtful and insecure about their leadership competences and knowledge before the program. After the program, they experienced enhanced leadership knowledge, improved confidence and clearer vision for the future. This change on leadership perspectives and behaviors is consistent with studies identifying that leadership and mentoring programs contribute to improved leadership skills and behaviors, more leadership awareness and experienced confidence of nurse scientists(2,10,11,39,40). Agreement between this study and literature indicates that leadership is vital for PN and further incorporation of leadership and mentoring programs into careers of PN should be expected.

This study identified that the program supported PN in developing and leading collaborations and research programs. Leading teams and fully employ the different qualities of team members was experienced as difficult. Numminen et al.(10) described these competences as required competences to develop a sustainable career. In addition, identifying funding's and speaking out are required competences, which PN found difficult. This showed that leadership and mentoring programs can support PN to develop required academic competences, however additional support, experience and knowledge is needed to strengthen academic competences.

The findings presented in the *Theme: 'Change in professional development'* showed that the program strengthened leadership and enhanced confidence to take on new career opportunities and to change positions. Nonetheless, few PN changed their position, which was contrary to studies explaining how mentoring and enhanced leadership can be an answer for postdoctoral nurses to take on new career steps and seeking for opportunities(10,41,42). An explanation for this may be that the interviews followed the program too soon, and the PN need more time to take career steps.

The findings presented in the *Theme: 'Satisfaction with the Nurse-Lead program'* showed that the program is valuable for all PN, however some experienced difficulties. The flexibility of the online courses was experienced as a strength of the program, but also as a challenge. Keeping on track in the program was experienced as difficult, because of busy schedules and many work activities. Literature have shown that PN generally experience a high workload, posing difficulties in seeking work-life balance(11,14,17,43). More attention should be given to this high workload, to allow PN more time to develop leadership skills,

strengthening their research careers and create career opportunities. This can improve the quality of research and quality of new knowledge being transferred to clinical practice for patient care.

This study showed mentoring is important for PN and provided more self-reflection, perspectives on career opportunities and practical and psychological support. This is consistent with research showing mentoring programs contribute to improved self-reflection on career and professional development(2,19,44). Literature stated that mentorship is successful if the relationship is equal and seen as an active process from both sides(3,19,20). Few PN experienced difficulties finding time to schedule meetings with the mentor and fully employ mentorship. More attention should be paid to a beneficial mentor relationship to strengthen research careers for PN.

The strength of this study is the robust method that was used by analyzing data with two researchers, coding independently and using the COREQ criteria(36). Themes emerged from the data were developed with consensus between the researchers. Furthermore, writing memos, pilot interviews, member check and using Nvivo to structurally analyze data contributed to the trustworthiness(35). Quotes were used to illustrate the essence of themes and subthemes to ensure thick description(28). There are several limitations in this study. The study included European PN, however fellows from only five countries were represented. Therefore, findings must be interpreted carefully to other European countries. The interviews were conducted in the English language, which was neither the mother language for the participants nor the researchers. This could have led to misinterpretation of the information. To reduce this bias, member checking was conducted. Throughout this study, the COVID-19 crisis may have influenced the recruitment and findings. The crisis had a huge burden on nurses, wherein nurses were forced to work in the extreme situations and encountered mental and physical health challenges(4). The researcher (KvE) consulted all participants before each interview to see whether conducting the interview would not be a burden on them. Therefore, before starting each interview the researcher thoroughly inquired with the participants if they were able and willing to take part in the interview.

The findings of this study have various implications. Leadership and mentoring programs are valuable and relevant for developing nursing research and strengthen careers of PN. Improved leadership and stronger competences to establish research programs may be an answer for nurses to challenge the current healthcare situation and deliver high-quality care for patients. Research on leadership and mentoring programs in nursing is implied, and the long-term influence of such programs on nursing research, education and the clinical practice need further investigation. Five European countries participated in this study. More research should be done on leadership and mentoring programs with more European countries to further substantiate the influence of such programs on nursing research in Europe.

Conclusion

The Nurse-Lead program is valuable for PN and had positive influence on leadership, professional development and various required academic competences to develop a sustainable career. This study illustrates the potential for nursing research to be more structured and demonstrates the positive influence on the connection between research, clinical practice and education, in which PN are leading. Leadership and mentoring programs are highly important to support PN and can contribute to clear pathways, clear visions, the development of sustainable careers in nursing research and the advancement of quality of patient care.

References

1. Budhdeo S, Watkins J, Atun R, Williams C, Zeltner T, Maruthappu M. Changes in government spending on healthcare and population mortality in the European union, 1995–2010: a cross-sectional ecological study. *J R Soc Med*. 2015 Oct;108(12):490–8.
2. Hafsteinsdóttir T, Van der Zwaag A, Schuurmans M. Leadership mentoring in nursing research, career development and scholarly productivity: A systematic review. *Int J Nurs Stud*. 2017;75(21):34.
3. Macke E, Thomas C. Effective mentoring of new registered nurses [Internet]. 2011 [cited 2019 Sep 28]. p. 55. Available from: <https://pdfs.semanticscholar.org/4e69/27bf991221c91bd20e70eda8b5db09bb3706.pdf>
4. Schoonhoven L, Trappenburg J, Bleienberg N. Behoud van korte en lange termijn fysieke/mentale gezondheid en inzetbaarheid van zorgprofessionals blootgesteld aan Covid-19 crisis werkomstandigheden. UMC Utrecht, Hogeschool Utrecht. Utrecht; 2020.
5. WHO. World health organization: State of the world's nursing. 2020.
6. Sandstrom B, Borglin G, Nilsson R, Willman A. Promoting the Implementation of Evidence-Based Practice: A Literature Review Focusing on the Role of Nursing Leadership. *Evid Based Nurs*. 2011;8(4):212–23.
7. Twelvetree T, Suckley J, Booth N, Thomas D, Stanford P. Developing sustainable nursing and allied health professional research capacity. *Nurse Res*. 2019;27(3):48–54.
8. Augustsson H, Churruca K, Braithwaite J. Re-energising the way we manage change in healthcare: the case for soft systems methodology and its application to evidence-based practice. *BMC Health Serv Res*. 2019 Sep;19(1):666.
9. Aiken L, Sloane D, Bruyneel L, Van den Heede K, Griffiths P, Busse R. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *Lancet (london, england)*. 2014;24(383(9931)):1824–30.
10. Numminen O, Virtanen H, Hafsteinsdóttir T, Leino-Kilpi H. Postdoctoral nursing researcher career: A scoping review of required competences. *Nurs open*. 2019;00:1–23.
11. Uitewaal-Poslawsky I, de Lange W, Regelink A, Hafsteinsdottir T. The Experiences of Dutch Post-doctoral Nurses with Leadership and Career Development: A General Qualitative Explorative Study. *J Nurs Sch*. 2019;51(6):689–98.
12. Aiken L, Fagin C. *Nursing and Health Policy Perspectives*. Philadelphia USA; 2018.
13. Manojlovich M. *Increasing nurse staffing levels and a higher proportion with bachelor's*

- degrees could decrease patient mortality risk. *Evid Based Nurs*. 2015 Apr 1;18(2):62 LP-62.
14. Barry M, de Groot E, Baggen Y, Smalbrugge M, Moolenaar N, Bartelink M. Understanding the Broker Role of Clinician–Scientists: A Realist Review on How They Link Research and Practice. *Acad Med*. 2019;94(10):1589–98.
 15. Jasper M. *Professional Development, Reflection and Decision-making for Nurses*. 2nd ed. Oxford: Blackwell; 2011.
 16. Northouse P. *Leadership:theory and practice*. 4th ed. Thousand oaks californa: SAGE Publications; 2007.
 17. Wong C, Cummings G, Ducharme L. The relationship between nursing leadership and patient outcomes: a systematic review update. *J Nurs Manag*. 2013;21(5):709–24.
 18. Cummings G, Tate K, Lee S, Wong C, Paananen T, Micaroni S. Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review. *Int J Nurs Stud*. 2018;85:19–60.
 19. Mccloughen A, O'Brien L, Jackson D. Esteemed connection: Creating a mentoring relationship for nurse leadership. *Nurs Inq*. 2009 Dec;16:326–36.
 20. Pfund C, Byars-Winston A, Branchaw J, Hurtado S, Eagan K. Defining Attributes and Metrics of Effective Research Mentoring Relationships. *AIDS Behav*. 2016 Sep;20 Suppl 2(Suppl 2):238–48.
 21. Bryant AL, Aizer Brody A, Perez A, Shillam C, Edelman LS, Bond SM, et al. Development and implementation of a peer mentoring program for early career gerontological faculty. *J Nurs Scholarsh*. 2015/03/25. 2015;47(3):258–66.
 22. Broome ME. Self-Reported Leadership Styles of Deans of Baccalaureate and Higher Degree Nursing Programs in the United States. *J Prof Nurs*. 2013;29(6):323–9.
 23. Cullen D, Shieh C, McLennon S, Pike C, Hartman T, Shah H. Mentoring Nontenured Track Nursing Faculty: A Systematic Review. *Nurse Educ*. 2017;42(6):290–4.
 24. Bowen. Were men meant to mentor women? *Train Dev J*. 1985;39(1):30–4.
 25. Race TK, Skees J. Changing Tides: Improving Outcomes Through Mentorship on All Levels of Nursing. *Crit Care Nurs Quarterly Prof Dev Empower*. 2010;33(2):163–74.
 26. Mills JF, Mullins AC. The California Nurse Mentor Project: Every Nurse Deserves a Mentor. *Nurs Econ*. 2008 Sep;26(5):310–5.
 27. Hafsteindóttir T, van Dongen L. *Nursing Leadership Educational Programme* [Internet]. 2019 [cited 2019 Oct 23]. p. 1. Available from: <https://www.nurselead.org/>
 28. Holloway I, Galvin K. *Qualitative Research in Nursing and Healthcare*. 4th ed. Chichester UK: John Wiley & sons; 2017.
 29. Kahlke R, Hon B. Generic Qualitative Approaches: Pitfalls and Benefits of Methodological Mixology. *Int J Qual Methods*. 2014 Feb 1;13:37.

30. Polit D, Beck C. Nursing research generating and assessing evidence for nursing practice. 10th ed. Philadelphia US: Wolters Kluwer; 2017.
31. Kluijtmans M, de Haan E, Akkerman S, van Tartwijk J. Professional identity in clinician-scientists: brokers between care and science. *Med Educ.* 2017;51:645–55.
32. Hickey K. Developing and Sustaining a Career as a Transdisciplinary Nurse Scientist. *J Nurs Sch.* 2018;50(1):20–7.
33. Zoom [Internet]. [cited 2019 Dec 14]. Available from: <http://zoom.us>
34. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3(2):77–101.
35. Nvivo [Internet]. [cited 2019 Oct 23]. Available from: <https://www.qsrinternational.com/nvivo/nvivo-products>
36. Tong A. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Heal care.* 2007;19(6):349.
37. World Medical Association (WMA). Declaration of Helsinki [Internet]. [cited 2019 Oct 23]. Available from: <https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/>
38. CCMO. Medisch-wetenschappelijk onderzoek en de WMO [Internet]. [cited 2019 Oct 23]. Available from: <https://www.ccmo.nl/onderzoekers/wet-en-regelgeving-voor-medisch-wetenschappelijk-onderzoek/uw-onderzoek-wmo-plichtig-of-niet>
39. IBM SPSS Modeler [Internet]. [cited 2019 Nov 22]. Available from: https://www.ibm.com/nl-en/products/spss-modeler?cm_mmc=Search_Google-_-Cloud+and+Data+Platform_Data+Science-_-EP_IBN-_-%2Bspss_b&cm_mmca1=000024OR&cm_mmca2=10006046&cm_mmca7=1010722&cm_mmca8=kwd-297966916468&cm_mmca9=EAlalQobChMlkveBhIr-5QIVhbHtCh2j_wujEAAYAiAAEgJYsfD_BwE&cm_mmca10=381673155500&cm_mmc_a11=b&gclid=EAlalQobChMlkveBhIr-5QIVhbHtCh2j_wujEAAYAiAAEgJYsfD_BwE&gclsrc=aw.ds
40. Martin J, McCormack B, Fitzsimons D, Spirig R. Evaluation of a clinical leadership programme for nurse leaders. *J Nurs Manag.* 2012;20(1):72–80.
41. Kinser PA, Loerzel V, Matthews EE, Rice M. Call to action to support the success of midcareer nurse scientists. *Nurs Outlook.* 2019;67(3):252–8.
42. Lach HW, Hertz JE, Pomeroy SH, Resnick B, Buckwalter KC. The Challenges and Benefits of Distance Mentoring. *J Prof Nurs.* 2013;29(1):39–48.
43. Hafsteinsdóttir T, Schuurmans M. Investeren in verpleegkundig onderzoek leiderschapsprogramme. *TVZ.* 2017;1.
44. Hadidi, Niloufar Niakosari Lindquist R, Buckwalter K. Lighting the Fire With Mentoring Relationships. *Nurse Educ.* 2013;38(4):157–63.

Tables

Table 1. Content Nurse-Lead Program(27)

Nursing Educational Leadership Program*	
Course modules: Postdoctoral Nurses (PN)	Course modules: Doctoral Nursing students (DNS)
<p style="text-align: center;"><i>A) 10 learning units (7,5 ECT)</i></p> <p><i>Including the following topics:</i></p> <ul style="list-style-type: none"> - Leadership & Personal Leadership development - Clinical credibility - Strategic Leadership - Communication and branding your research - Networking - Negotiations - National and international Research collaboration - International grant funding 	<p style="text-align: center;"><i>B) 6 learning units (5 ECT)</i></p> <p><i>Including the following topics:</i></p> <ul style="list-style-type: none"> - Leadership in nursing - The first steps as a leader - Having a vision towards (your) research - Clinical credibility - Research dissemination and implementation - Research management - Ethical issues in nursing research - View the future
Teaching and learning methods: reading literature, view web lectures, do individual and group assignments	
<i>A) Personal mentoring trajectory</i>	<i>B) Personal mentoring trajectory</i>
<ul style="list-style-type: none"> ▪ Each fellow identifies a mentor who supports and monitors the development of the fellow ▪ Baseline leadership assessment is conducted ▪ Leadership and professional competencies development plan is set up with the mentor. 	
<i>C) Meet the expert sessions</i>	<i>B) Meet the expert sessions</i>
Leading nurse scientists share their leadership practices, professional development and recent research findings	

*The program was developed based on the scoping review of Numminen et al. concerning competency profiles for DNS and PN and the systematic review of Hafsteinsdóttir, Zwaag & Schuurmans about leadership programs for PN(2,10).

Table 2: Thematic analysis Braun and Clark(34)

Phase	Examples of procedure for each step
1. Familiarising oneself with the data	Transcribing data; reading and re-reading; noting down initial codes
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the dataset, collating data relevant to each code
3. Searching for the themes	Collating codes into potential themes, gathering all data relevant to each potential theme
4. Involved reviewing the themes	Checking if the themes work in relation to the coded extracts and the entire dataset; generate a thematic map
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme; generation of clear names for each theme
6. Producing the report	Final opportunity for analysis selecting appropriate extracts; discussion of the analysis; relate back to research question or literature; produce report.

Table 3: Baseline characteristics

Item	Response	Frequency (N=12)
Age	30-40 years	2
	41-50 years	6
	51-60 years	4
Gender	Male	2
	Female	10
Nationality	The Netherlands	4
	Germany	2
	Portugal	3
	Finland	2
	Iceland	1
Years of PhD degree	1-3 years	4
	4-6 years	4
	7-9 years	3
	10-12 years	1
Academic function	Professor	1
	Assistant professor	3
	Researcher	3
	Researcher and teacher	3
	Researcher, teacher and manager	1
	Lecturer and manager	1
Type of organization	University	7
	University Medical Centre	4
	University of applied science	1
Completed online modules in the Nurse-Lead program (0-10)	5-7	2
	8-9	2
	10	8

Table 4: Findings

Themes	Subthemes	Quotes
1. 'Change in leadership'	'Changed view on leadership'	<i>'When I have this theoretical foundation about leadership it helps me to apply it. I can look out for it and make the necessary changes.'</i> (P9).
	'Leading teams'	<i>'It is a thing (leading teams), that I don't deal well in the past and I don't deal well now. It is a thing I changed a lot, the way I see, feel and think about that. The commitment that the goal we have, everybody is different.'</i> (P1)
	'Leading research programs'	<i>'The program made me aware that branding is an important aspect and I have started this. In my own institute I am the only one with a logo.'</i> (P9).
	'Leading collaborations'	<i>'I realized that I am locked up in our little region...I learned to get new ideas and be in contact with the outside world. It is a desert if you are always working in your small world.'</i> (P6).
2: 'Change in professional development'	'Professional development plan'	<i>'I really valued the professional development plan. It makes you think about what you want to do...It is a structured method to think about my professional development, like a tool.'</i> (P10)
	'Becoming more confident'	<i>'Confidence is also an insight of the program, like I am doing it okay, it was like a mirror to me and I am always critical on myself.'</i> (P4) <i>It remains hard for me (being visible), to say: hey look what I am doing!'</i> (P3)
	'Becoming more strategic'	<i>'The program opened up possibilities on applying for grants, but to apply this in practice is difficult, it is more an awareness.'</i> (P12). <i>'I discussed this with my mentor...he shared new innovative ways to apply for grants that helped me.'</i> (P3).

	'Finding work balance'	<i>'I have to admit that it is difficult to do...I make a plan on what I can do now and what can I do later...But it is difficult, and when we had to do the assignment on structuring our work better,- that really helped us.'</i> (P8).
	'Taking steps in the career'	<i>'For this role of being editor for this journal...I think that the program encouraged me to apply for this position'.</i> (P2).
3. 'Satisfaction with the Nurse-Lead program'	'Value of the online program and the international perspective'	<i>'The strength of the program is also the challenge of the program. Strength is that you can do it in your own time, you can schedule it yourself...But this is the challenge, because you have to give it priority.'</i> (P3).
	'Value of mentoring'	<i>"He was more like psychological mentor.....more to help me understand and realize why I do certain things I do.'</i> (P2). <i>'I got a mentor and because of the time zone and busy schedules it was very difficult to find mutual timing.'</i> (P12).

Appendix

Appendix 1: Interviewguide

Nurse-Lead fellows' experiences with a leadership and mentoring program: A qualitative study

Interviewguide

Study objective

The objective of this study is to explore the experiences of the postdoctoral fellows with following the Nurse-Lead program, and the influence of the Nurse-Lead program on their leadership behavior, professional development and academic competences.

Introduction question.

What was your motivation to participate in the Nurse-Lead program?

Meaning of the Nurse-Lead program on professional and leadership development:

- How have you changed throughout the Nurse-Lead program? (Refer to professional development plan; goals, actions, success, barriers + academic competences).
 - How do you think and act when working with others when conducting research projects and bringing them to an end? (Leadership)
 - How do you (constantly) advance yourself as professional in your roles and functions? (Professional development)
 - How do you plan and act towards building a sustainable position in academe? (Career development)

Ask about: Link with Nurse-Lead program and the required academic competences.

Experiences with the program:

- How did you experience the program?
 - What were the strengths of the Nurse-Lead program?
 - What were aspects for improvement in relation to the Nurse-Lead program?

Final question.

Do you have other topics that you would like to discuss, or do you have final comments?