

The Experiences of Dutch Post-doctoral Nurses with Leadership and Career Development: A General Qualitative Explorative Study

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1. Abstract

Title The Experiences of Dutch Post-doctoral Nurses with Leadership and Career Development: A General Qualitative Explorative Study

Background Currently challenges in health care calls for leadership to rebuild the nursing workforce and implement new models of care. Therefore, it is highly important to strengthen the research capacity of nursing faculties by investing in leadership and career development of post-doctoral nurses. However, research on the experiences of post-doctoral nurses is lacking.

Aim To explore Dutch post-doctoral nurses' experiences with their leadership and career development in research functions.

Method A general qualitative design was used, in which the experiences of post-doctoral nurses were explored by conducting open, in-depth interviews. The data were analyzed with a thematic analysis approach.

Results Twelve interviews were conducted, during which the experiences of post-doctoral nurses were explored. This led to five themes: *Scientific World; Professional Identity; Balance in Life; Appreciation, Collaboration, and Support; and Career Development and Leadership*. Post-doctoral nurses have multiple functions, sometimes with conflicting demands between research and patient care or education. Support, collaboration, appreciation, identifying as a nurse, maintaining balance and leadership behavior are important preconditions for post-doctoral nurses to develop a successful career. On the other hand, the absents of this preconditions was hindering post-doctoral nurses in the development of their career.

Conclusion Post-doctoral nurses experience hindering- and helping aspects regarding their career development. They balance these aspects in their own way by using their leadership skills. Leadership behavior was found to be the highly important in the career development of post-doctoral nurses in order to develop themselves in a positive way.

Implications This study demonstrates that the scientific world can be a tough environment. Support, collaboration, leadership behavior, nursing identity, and maintaining balance for post-doctoral nurses are needed. Attention to the change process of the Dutch scientific world is recommended. In addition, the creation of robust fulltime academic functions in or close to clinical practice is needed.

Keywords *Leadership, experiences, post-doctoral nurses, career development, scientific world*

2. Samenvatting

Titel	Het exploreren van de ervaringen van Nederlandse gepromoveerde verpleegkundigen naar leiderschap en carrièreontwikkeling
Achtergrond	De gezondheidszorg heeft te maken met grote uitdagingen, waarbij behoefte is aan verpleegkundig leiderschap bij het doen van onderzoek en het implementeren van nieuwe methodes in de praktijk. Het investeren in de mogelijkheid voor de beroepsgroep voor het uitvoeren van robuust onderzoek is van belang, waarbij gepromoveerde verpleegkundigen in het bezit zijn van de benodigde competenties. Desalniettemin is het ontwikkelen van een succesvolle carrière voor gepromoveerde verpleegkundigen niet eenvoudig. Echter onderzoek naar de ervaringen van Nederlandse gepromoveerde verpleegkundige ontbreekt.
Doel	Het exploreren van de ervaringen van Nederlandse gepromoveerde verpleegkundigen naar leiderschap en carrièreontwikkeling in onderzoeksfuncties.
Methode	Een generiek kwalitatief design, gebruikmakend van open-interviews werd gerealiseerd. De interviews werden geanalyseerd met behulp van thematische analyse.
Resultaten	Twaalf gepromoveerde verpleegkundigen zijn geïnterviewd. Uiteindelijk zijn vijf thema's gevormd: <i>Wetenschappelijke wereld; Professionele identiteit; Balans in het leven; Erkenning, samenwerking en ondersteuning; en Carrièreontwikkeling en leiderschapsgedrag</i> . Gepromoveerde verpleegkundigen hebben meerdere functies, waarbij steun, samenwerking, erkenning, jezelf identificeren als verpleegkundige, balans, en leiderschapsgedrag belangrijke voorwaarden voor het ontwikkelen van een succesvolle carrière. De afwezigheid van deze voorwaarden belemmeren juist de carrière ontwikkeling van deze verpleegkundigen.
Conclusie	Gepromoveerde verpleegkundigen ervaren helpende en belemmerende aspecten in hun carrière ontwikkeling en gaan hier verschillende mee om. Leiderschapsgedrag is essentieel voor het ontwikkelen van een succesvolle carrière als gepromoveerd verpleegkundige.
Implicaties	Deze studie geeft aan dat de wetenschappelijke wereld een harde wereld kan zijn. Aandacht is vereist voor de implementatie van het veranderproces in de wetenschappelijke wereld, waarbij de focus verlegd moet worden naar de impact van onderzoek voor patiënten en de maatschappij. Daarnaast is het van belang dat er academische functies worden gecreëerd voor gepromoveerde verpleegkundigen, in- of met directe betrokkenheid- bij de praktijk.
Trefwoorden	<i>Carrière ontwikkeling, leiderschap, gepromoveerde verpleegkundigen, kwalitatief onderzoek, ervaringen</i>

3. INTRODUCTION

Given the challenges that health care is facing globally, there is a call for leadership to rebuild the nursing workforce and implement new models of care.^{1,2} To cope with these challenges, nursing research capacity, or *“the ability to undertake high-quality research within a professional group”*,³ has high priority.⁴ Developing research capacity is important because of the overall contribution of research to evidence-based care and to improving patient outcomes.⁵⁻⁸ Although research in nursing has been growing in most European countries, research capacity in many nursing faculties is still limited and fragile.² There is a lack of a standardized approach to research, and the methodological quality is often poor.^{2,9} Strengthening leadership and the career development of post-doctoral nurses are considered important conditions to realize a strong research capacity.¹⁰

The faculty roles of post-doctoral nurses in academic settings are generally viewed from the tripartite of the academy: teaching, conducting research, and providing service to the university and profession.¹¹ Although research has a high priority, post-doctoral nurses struggle with their heavy teaching workload and limited time to conduct research.⁴ However, addressing this tripartite role is critical to faculty success.¹¹ Studies clarify that there is a need for more collaboration and peer support after the completion of a doctoral degree.^{12,13} The increased competition for funding and lack of support make it extremely difficult for post-doctoral nurses to develop a sustainable career.^{14,15} Developing a sustainable career in research demands more than a toolbox of skills: it also demands leadership competencies.¹

Leadership has been studied in a variety of disciplinary fields, and can be defined as follows: *leadership is a process, entails influence, occurs within a group, and involves achieving goals that reflect a common vision.*^{16,17} An example of leadership can be found in the five leadership practices: *model the way, inspire a shared vision, challenge the process, enable others to act, and encourage the heart.*¹⁸ Cumming et al. reveal a trend in outcome patterns that supports the claims that leadership practices contribute to improving outcomes for nurses and in work environments.¹ Based on this background, policy reports have called for stronger leadership in nursing to advance improvements in healthcare organizations.^{1,19-21} To answer this demand, it is highly important to strengthen the research capacity by investing in the leadership and career development of post-doctoral nurses. Career development is defined as *a developmental life process, in the context of the individual and the environment in which the individual exists.*²² However, research on leadership and career development that focuses on the experiences of post-doctoral nurses is lacking.

This is especially the case in the Netherlands, although nurses comprise the largest group of healthcare professionals.²³ In 2005, it was estimated that 50 nurses had a doctoral degree.⁹ Currently it is expected that the number of post-doctoral nurses is growing, however little is

known about post-doctoral nurses in research functions. Research functions are defined as *working in research positions, as an assistant or associate professor, or as a professor within a nursing science faculty or a research institute.*

Only a limited number of qualitative studies have investigated the career development of post-doctoral nurses. For example, the experiences of post-doctoral nurses in Jordan are described in the context of receiving their degree overseas and returning home in faculty roles. Mentorship, leadership, and peer support were identified as essential.¹² Furthermore the experience of post-doctoral women in the first five years after their graduation is described, demonstrating that doctoral identity was synonymous with performing scholarly activities and took five years to be internalized.²⁴ Furthermore, Prononsky's case study describes the experiences of female assistant professors in nursing with children.²⁵ These nurses struggled to find a balance between the demands of work and parenting.²⁵

Although some qualitative research on the experience of post-doctoral nurses has been conducted, these studies generally focus on the specific situation of women. There is a lack of research exploring the experiences of Dutch post-doctoral nurses regarding their leadership and career development in research functions. Such an understanding could guide the further development of research capacity and of the nursing profession in the Netherlands.

3.1 Research Aim

To aim of the study is to explore post-doctoral nurses' experiences with their leadership and career development in research functions in the Netherlands.

4. Method

4.1 Design

This study has a general qualitative explorative design, because this approach is suitable when a problem needs to be explored in order to reveal the experiences of the participants.²⁶ The study was conducted from January to June 2016 in the Netherlands. The consolidated criteria for reporting qualitative research were followed in this study.²⁷

4.2 Population and Domain

The population of interest consisted of Dutch post-doctoral nurses working in research functions. The size of the population is unknown, but is estimated to be 80 post-doctoral nurses. To explore their experiences, a criterion sample was used, with the main criterion focusing on a doctoral degree. Post-doctoral nurses were included if they had received their doctoral degree at last six months before the start of the study, were working in research a minimum of eight hours a week, and spoke Dutch.

4.3 Data Collection

Open in-depth interviews were used to allow participants to represent their experiences in their own words. This type of interviewing allows flexibility and makes it possible to follow the interests and thoughts of the participants.²⁸ A pilot of two interviews was conducted to optimize the interview skills of the first researcher (WdL). After this preparation, 12 interviews were conducted in the participants' preferred location.

An interview guide based on the literature was used in preparation for the interviews, containing questions exploring the experiences of post-doctoral nurses focusing on career development,¹¹ leadership,^{12,29,30} mentoring,^{13,24,25,30-34} health and caring,²⁵ collaboration, workload,^{12,13,23,24,27,32,34} research and scholarship productivity.^{12,25,29,30,31-37} (appendix 1). However, no preconceived questions were asked, except for the opening question: *"How did you experience your career development after your doctoral degree?"*

Data collection was stopped after reaching saturation of data, which indicated that no new concepts could be identified that were important.³⁸

4.1 Procedures

In January 2016, (associate) professors of Dutch nursing faculties and research institutions received an e-mail with an invitation to participate in the study. They were asked to communicate the invitation with their colleagues. Participants could choose to participate in the study by replying to the e-mail. Next, the participants were asked to answer three questions in order to collect data that would be used to achieve maximum variation and to check the inclusion criteria. Data concerning age, gender, working years after doctoral degree, and functions were collected (Appendix 2), because these aspects can affect the experience of post-doctoral nurses. Then, based on the analysis, the researchers (WdL and TH) identified which perspective provided a deeper understanding of the experiences of post-doctoral nurses. Data collection and analysis constituted an iterative process, meaning that the researchers moved back and forth from data collection to analysis.³⁸ Furthermore, a member check was conducted by giving parts of the results back to the participants. During the study, memos were made in order to remember all relevant impressions and decisions in the process.

4.2 Data Analysis

The data from the interviews were analyzed using a thematic analysis approach containing six phases (Table 1). Thematic analysis is a flexible method for identifying and analyzing patterns within data.³⁹ Thematic analysis was suitable for this study because this method can be used to report participants' experiences, and can examine the way in which experiences are the effect of a range of discourses operating within private life, work life, or society.³⁹ All interviews were conducted by WdL, audiotaped, and transcribed verbatim; NVivo software⁴⁰ was used in the analysis process. The researchers (WdL and TH) independently coded the data. Themes leading to the thematic map were created in consensus between both researchers.

Insert Table 1: Six phases of conducted thematic analysis

4.3 Ethical Issues

The principles of the Declaration of Helsinki,⁴¹ the regulation of protection of personal data⁴², and the guidelines of Good Clinical Practice⁴³ were followed in this study. The participants were informed about the study, and the participants and researcher signed an informed consent.

5. Results

5.1 Baseline Characteristics of the Participants

Forty post-doctoral nurses were willing to participate, and 12 participants received an invitation for an interview. All participants were post-doctoral nurses. The interview time ranged between 39 and 90 minutes. Time after doctoral degree ranged from eight months to 12 years (Table 2).

Insert table 2: Participant characteristics

5.2 Findings

The findings are summarized into five themes: *Scientific World; Professional Identity; Balance in Life; Appreciation, Collaboration, and Support; and Career Development and Leadership*. During the research process, the interview guide was not adapted and saturation of data was achieved after 10 interviews. Two more interviews were conducted to verify and confirm saturation.

Theme: Scientific World – Love and Hate

Coping with the tension of enjoying and handling the pressure of the scientific world can be seen as important preconditions for post-doctoral nurses to develop a successful career. All participants had to deal with the demands and principles of the scientific world. Publishing an article was experienced as joyful, as providing recognition for hard work, and as an opportunity to share knowledge and to be visible as a researcher. Some participants felt the pressure of publishing papers and of having a publication in a journal with a high impact-factor. Some participants noted that the downside of this is that these publications do not reach nurses (quote 1), because they felt that these nurses did not read this material.

A few participants described the scientific world as a “strange” world and did not want to be a part of it, but felt that it was a “must” if they wanted to be researchers (quote 2). Participants described nursing science as a young profession, and noted that peer-reviewed nursing journals therefore generally do not have a high impact-factor. Consequently, meeting the criteria to be a professor is difficult for nurses.

Some of the participants described the designs used in their research. These were generally close to their patients, and thus the designs chosen were often qualitative or followed clinical practice without blinding or control. Other professionals refer to this as “improvised” designs,

thus suggesting less appreciation of this work. A few participants expressed their view that they wanted to see nursing organized with academic functions, with a focus on research, patient care, and education (quote 3).

Box 1. Quotes

1. *“One of my articles was published in a high impact journal. Everyone was saying: wow, you did great! But I was thinking: this is not reaching nurses, nobody is going to read this.....”*
2. *“I find the scientific world to be a strange world sometimes. The bustle and the speed with which new ideas have to develop because of a call for a grand proposal. I don’t want to be a part of it, that is a dilemma.”*
3. *“I think that nursing has to be organized the way medical doctors do it. It’s ridiculous that nurses who conduct research or give education don’t see patients anymore.”*

Subtheme: Crossroad after Promotion

Being able to find one’s way after receiving a doctoral degree seems to be an important precondition for developing a successful career. This period can be described as being at a “crossroad”. A few participants described a crossroad as a time of quiet after graduation, full of questions (quotes 4 and 5), searching for one’s own identity as a post-doctoral nurse. There are usually opportunities in the scientific world, however sometimes participants wanted to wait so that they could make the right choice for their own career. Participants experienced a different role, with a shift in responsibilities in their working life. They were “seniors” now, and had a more advising and supervising role at work. Although, some indicated that those new responsibilities could be “scary”, they mostly felt ready to handle them. A few participants felt insecure, but as time passed they felt increasingly confident (quotes 6 and 7).

Box 2. Quotes

4. *“It is like a crossroad, where you think: what do I want to do? Do I want to specialize more or be a generalist?”*
5. *“It is a climax and at the same time an anti-climax, because after the promotion there is a period of nothing. It is saying goodbye to a period and finding the energy to move on.”*
6. *“The responsibility for the quality of study and the article that we wrote was on me. There is nobody else to blame. That is a bit scary, however it is part of the deal.”*
7. *“Sometimes I think: now they’ll find out that I’m no good. Now it will be visible. But it has never happened. I used to have this feeling more often, but I do not have it that frequently anymore.”*

Subtheme: Multiple Functions – Thousand-feet

Post-doctoral nurses are ‘thousand-feet’, and they enjoy the work that they do. However there is tension between enjoying the content of the work and having a workload that is too heavy to handle. Most participants had multiple functions, including working part-time in research and teaching and/or clinical practice and/or management (Table 3). All participants had to divide their time between different types of work, sometimes with conflicting demands. The most frequently experienced conflict was in the combination of research, patient care, and education (quotes 8, 9 and 10). A few participants commented that their employers did not give them fulltime contracts as researchers, and therefore they fulfilled their work week with other assignment or applied for a different job (quotes 11 and 12). Most participants enjoyed the diversity of their work because they felt the freedom to organize it themselves.

Insert table 3: Multiple functions and activities of post-doctoral nurses

Box 3. Quotes

8. *“Patient care is always a demand, it has to happen today. Then research has to come tomorrow.... You have to deal with this uncertainty, because it always adds pressure.”*

9. *“Each year I told my supervisor that I was not publishing enough. It bothered me, not my supervisor.”*

10. *“My workweek is a mix of conducting research, meetings, supervising PhD students, writing.... Oh teaching... And I work in clinical practice...”*

11. *“Being a researcher alone is too vulnerable from an economic perspective, is what they think in this organization, so I have to work one day in clinical practice.”*

12. *“I chose the consultant business to make money. There was no fulltime job as a researcher.....”*

Theme: Professional Identity – Being a Nurse

Being able to identify oneself as a nurse (-scientist) is considered to be an important precondition for developing a successful career. On the other hand, post-doctoral nurse who stood alone were struggling in the scientific world. There was a tension in the way the participants identified themselves, and between whether they saw themselves as a nurses or as something else. Most participants saw themselves as nurses who conducted research to improve patient care. Nursing was the cornerstone of their professional identity (quote 12). A few participants, however, clearly did not want to identify themselves as nurses and chose to

work in non-nursing organizations (quote 13). Sometimes participants worked more in isolation, making it difficult to connect with other professionals (quote 14). The participants working in clinical practice did so because they enjoyed caring for patients (quote 15). Some participants wanted to work in clinical practice so that they could use their knowledge, but did not have the opportunity to do so (quote 16).

Box 4. Quotes

12. *"Being a nurse is the cornerstone of my profession. Conducting research and giving education are services to my profession, but are not my profession."*

13. *"I'm no caregiver or nurse. During my education to become a nurse it was obvious.... all the misery of patients, it would dominate my life....."*

14. *"I'm alone, there are no other nurse scientist in this department. I would like to have someone to work with and discuss substantive issues with....."*

15. *"Losing patient care in my work week is not an option, it's the foundation of what I do."*

16. *"I would like to work in clinical practice, I'm a nurse..... I enjoy patient care and I can use my knowledge.... My supervisor says: you can do so much better. Do you really still want to wipe bottoms?"*

Theme: Balance in Life

Keeping balance can be seen as a precondition for post-doctoral nurses to handle all relationships and demands in their life. Having balance between work and private life was an important issue. Although most participants experienced balance, they talked about making choices and taking the lead in sharpening their work and private life as a continuing process (quote 15). Spouses supported and took care of the children in most of the participants' lives. Spouses had an important role by asking questions about balance. For a few participants, publishing was like an outgrown "hobby", as they did extra work in the evenings and weekends (quote 16).

Box 5. Quotes

15. *"Balance is the magic word."*

16. *"All the work is at home, so I can work quietly, analyze, and write. And I like it, it is a hobby."*

Theme: Recognition, Collaboration, and Support

Recognition, collaboration, and support can be seen as preconditions for post-doctoral nurses to have a successful career. It was highly important for most of the participants to have support from colleagues and supervisors. Appreciation from other professionals such as physicians helped participants in their work. Many of the participants still had contact with their promoter(s) as sparring partners, which they experienced as helping them to find their way and to make professional decisions. There was tension between having a sparring partner and having a sparring partner who also had an interest in the decision of the participant. The sparring partner had to be selflessly supportive in the development of the participant in order to be helpful. Some participants experienced lack of support and collaboration, in which the organization for which they worked played an important role (quote 17).

Most of the participants experienced that their title of “doctor” gave them self-confidence and pride, offered them opportunities, and helped them gain the respect of other professionals (quote 18). Some participants used this to reach their goal, while others found that using the doctor title was “wrong” because it had nothing to do with the content of their work.

Box 6. Quotes

17. *“I’m the only nurse scientist in a medical department. For my research I had to be here in this hospital. I have to bring in my own money by writing grant proposals. If I do, I can stay. But I’m only tolerated.”*

18. *“The title of doctor means that you are seen as equal and are taken more seriously by other academic professionals like physicians.”*

Theme: Career Development and Leadership – Vision and Behavior

Being able to take up leadership behavior can be seen as a precondition to developing a successful career. There was a dissimilarity between the participants: most of them had a clear vision about their leadership and their career development, but some others did not. A few participants had a clear picture and a plan of where they were heading with their career (quote 19). Most participants described their vision and saw themselves taking a pro-active role in their own career and in the profession by guiding others, sharing their vision, working together, and making connections (quote 20). Conversely, other participants did not take leadership and control in their career, and they felt more pressured and misunderstood by others (quote 21). Most male participants were open about their ambitions, whereas none of the female were.

Being open about ambitions, for example by talking about one's own career with colleagues and supervisors, was beneficial; these colleagues and supervisors could later think about these participants when opportunities arose, thereby offering them support (quote 22).

Box 7. Quotes

19. "I have a plan for my career. My goal is be a lector, and so I asked myself, what do I need to reach my goals? Management experience and writing grant proposals are still missing, so I have to develop these skills."

20. "For the colleagues I supervise, I try to be a leader by asking question about how they are doing, and what their goal is. I try to let them see the bigger picture, so they don't lose themselves in details."

21. "They do not understand me, they don't get it.... Now I'm the one the blame, there is a conflict now."

22. "I speak about my ambitions with my supervisor. In my previous job too. My supervisor there was the one who tipped me about this job. She said: I don't want to lose you, but this job is in line with what you want."

Thematic Map

The thematic map below presents the themes and the essence of the findings. The presence of the described preconditions can be seen as "helping aspects", while the absence of preconditions can be seen as "hindering aspects" in the career development of post-doctoral nurses (Figure 1).

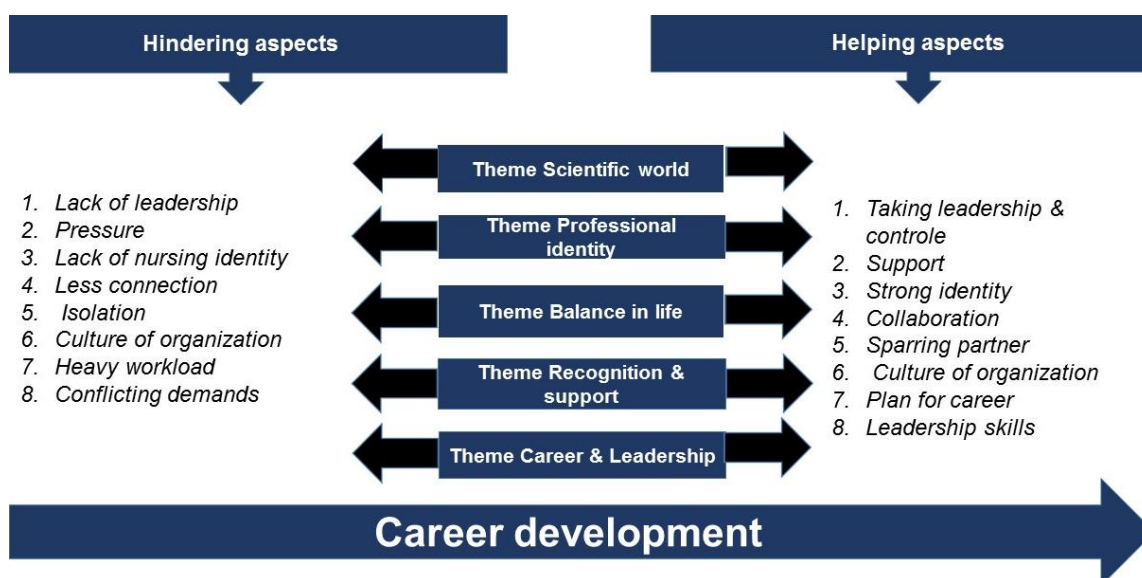


Figure 1. Thematic Map

Hindering- and helping aspects according to the experiences of post-doctoral nurses in their career development.

6. Discussion

The aim of this study was to explore the experiences of Dutch post-doctoral nurses regarding their leadership and career development in research functions. Five themes emerged: *Scientific World*; *Professional Identity*; *Balance in Life*; *Recognition, Collaboration, and Support*; and *Career Development and Leadership*. Post-doctoral nurses have multiple functions and activities, from which they experience hindering- and helping aspects regarding their career development. The post-doctoral nurses in this study balanced these aspects in their own way by using their leadership skills.

Our findings presented in *Theme: Scientific World* highlight the system of the scientific world. Some post-doctoral nurses experience pressure to publish papers, of which the impact for patients or nursing is underexposed. The system of the scientific world has already been a topic for discussion, whereby researchers argue that the starting point for research should be societal and clinical need and not scholarly productivity.^{44,45} Nursing research has the potential to have a societal and clinical impact, and post-doctoral nurses in our study expressed their wish to conduct research with an impact for patients. Therefore, a change in the scientific world is desirable and would support post-doctoral nurses in developing their career in nursing research.

The findings presented in *Theme: Professional Identity* demonstrate that identifying oneself as a nurse is a helping aspect in career development. When identity is strongly developed, it is possible that nurses are more capable of connecting with other professionals and of finding their way in the scientific world. However, no literature could be found on this subject.

Our findings presented in *Theme: Balance in Life* regard the importance of having balance, which is in line with another study.²⁵ On the other hand, the present study adds that balance is also an important issue for male post-doctoral nurses, and for nurses without children.

Our findings discussed in *Theme: Recognition, Collaboration, and Support* demonstrate that having a (informal) mentor, recognition, support of colleagues, and spouses helps post-doctoral nurses in developing their career, which is in line with other studies.^{12,13} However, in the literature describing the experiences of research nurses, a lack of confidence and difficulties maintaining motivation are reported.¹⁵ Although the level of education of these nurses is not reported, the findings do not correspond to our findings. Dutch post-doctoral nurses who work in research face challenges, but most of all they enjoy their work. A possible explanation could be that Dutch post-doctoral nurses experience freedom in the content of their function(s), which keeps them motivated.

The findings presented in *Theme: Career Development and Leadership* indicate that leadership behavior is the key to developing a successful career. Kouzes and Posner describe

five leadership practices: *model the way, inspire a shared vision, challenge the process, enable others to act, and encourage the heart*.¹⁸ Although the theory illustrates leadership behavior, our findings suggest that successful post-doctoral nurses take and get the opportunity to be leaders. There are hindering- and helping aspects in developing a career, some of which are linked to personal characteristics, while others are associated with work environment. This means that not all aspects are fully controlled by post-doctoral nurses, in particular coping with multiple functions and the Dutch scientific system.

A strength of this study is the robust method that was used by working independently in the coding process and developing themes based on consensus. In addition, several methods were executed to improve the rigour and trustworthiness of the study: writing memo's, conducting two pilot interviews and a member check on parts of the results. Minor changes were made in the information about functions and activities, none in the content of the results. To appreciate our findings, certain limitations need to be considered. The second researcher is a post-doctoral nurse herself; it was therefore important to separate her experiences from those of the participants in order to prevent bias. Although the principle of maximum variation was the used, the second limitation of this study is the non-participation of some researchers working in universities. The reasons for non-participation are not clear; however, the population of post-doctoral nurses is small, and therefore it could be that nurses who were worried about being recognized did not reply to the invitation to participate.

This study demonstrates that the scientific world can be a tough environment, where support, leadership behavior, nursing identity, and collaboration of post-doctoral nurses are needed. Although researchers want to change the Dutch scientific system,⁴⁵ none of the participants mentioned this change process. There seems to be a gap between policy and their experience; however, our findings cannot be generalized due the small sample. It is recommended to focus on implementation in order to change the scientific system, in which post-doctoral nurses take the lead and collaborate. Furthermore, it is recommended that the functions for post-doctoral nurses be rebuilt, and that multiple part-time functions with a risk of overpressure and complex demands be prevented. Post-doctoral nurses can be seen as the leaders of the nursing profession, and therefore the creation of robust and fulltime academic functions for them are needed. On the other hand, it is recommended that academic functions be created in clinical practice. The literature shows that well-educated nurses reduce the risk of mortality, and therefore academic functions for nurses in clinical practice would likely improve patient outcomes.⁴⁶ The question of how to fulfill these academic functions must be a topic on the profession's agenda. Finally, it is recommended that further research be conducted including post-doctoral nurses in other functions in order to gain an overview of their overall experiences.

7. Conclusion

In this study, the experiences of Dutch post-doctoral nurses regarding leadership and career development were summarized into five themes: *Scientific World; Professional Identity; Balance in Life; Recognition, Collaboration, and Support; and Career Development and Leadership*. Post-doctoral nurses have multiple functions and experience hindering- and helping aspects regarding their career development. They balance these aspects by using their leadership skills. Leadership behavior was found to be highly important in the career development of post-doctoral nurses. However, not all of these aspects are in full control of post-doctoral nurses themselves. The Dutch scientific system is already a topic discussion, as researchers argue that societal and clinical impact should be the starting point of research. Nursing research has the potential to have an impact on societal and clinical practice, which fits the values of the profession. Emphasis on the implementation of the change process of the Dutch scientific world is recommended. Furthermore, the creation of robust and fulltime academic functions, with an involvement in or close to clinical practice, is also needed.

6.Tables

Table 1.

Six phases of conducted thematic analysis

Phase	Description of process and conducted analysis
1. Familiarizing with data	Transcribing the data ¹ , reading and re- reading the data ² , noting down initial ideas ²
2. Generating initial codes	Coding interesting features across the entire data set ³
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each theme ⁴
4. Reviewing themes	Checking if the themes work in relation to the coded extracts and the entire data set. Making a thematic 'map' of the analysis ⁴
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme and generating clear definitions of each theme ⁴
6. Producing the report	The final opportunity for analysis by producing a scholarly report ⁴

¹ first researcher WdL

² First and second researcher (WdL and TH)

³ WdL and TH independent

⁴ WdL and TH based on consensus

Table 2.
Participant characteristics

Item	Response	Frequency ¹ (<i>N</i> = 12)
Age	30 – 40 years	2
	41 – 50 years	4
	51 – 60 years	5
	61 – 65 years	1
Gender	Male	4
	Female	8
Children	Yes	7
	No	5
Partner	Yes	10
	No	2
Academic function ^{1, 2}	Visiting professor	1
	Professor/ lecturer	1
	Associate lecturer	1
	Assistant professor/ Senior researcher	6
	Project leader/ researcher	2
	Clinical Nurse Specialist (MANP)	3
	Epidemiologist	1
Lecturer/ teacher	2	
Research time (<i>1 fte</i>)	< 1 day	1
	1 day	3
	2 days	2
	3 days	2
	Fulltime	4
	Extra time	3
Place of work ¹	University Medical Center ³	4
	University of Applied Science ⁴	5
	(Mental) Healthcare institution	3
	Hospital	2
	Research institution	2
Years after doctoral degree	< 1 year	4
	2 – 5 years	2
	6 – 10 years	4
	11 – 15 years	2

¹ The frequencies do not add up to sample size because the participants can have multiple functions or activities

² The academic function is the function described by the participants themselves.

³ The medical faculty and the university hospital are one institute

⁴ Institutes of nursing and Master of Advanced nursing Practice and/or Bachelor nursing education

Table 3.

Multiple functions and activities of post-doctoral nurses (subtheme Multiple functions: thousand-feet)

Function ¹	Description	Participant											
		1	2	3	4	5	6	7	8	9	10	11	12
Researcher		x	x	x		x	x	x	x	x	x	x	x
Teaching function			x	x	x		x	x		x	x		x
Clinical function		x		x				x			x		
Management function	<i>Formal leading others</i>	x					x			x			x
Activity¹	Description												
Conducting research		x	x	x		x	x	x	x	x	x	x	x
Advisory committee	<i>Formal advisory organ</i>		x					x			x		x
Teaching	<i>Teaching the methodology of research</i>		x		x		x				x		x
Coaching /mentoring	<i>Being a coach or mentor for others</i>		x				x		x	x	x	x	
Coordinating research		x	x	x			x	x	x		x	x	
Clinical function	<i>Conducting patient care or treatment</i>	x		x				x			x		
Innovation	<i>Plan and conduct</i>	x	x					x	x	x	x	x	x
Implementation	<i>Implementation research</i>		x			x		x	x			x	x
Writing peer- reviewed	<i>Publishing</i>	x	x		x		x	x	x	x	x	x	x
Writing	<i>Clinical articles, books or guidelines</i>	x							x			x	
Starting something new	<i>Conducting a new role in organization</i>	x		x			x			x		x	
Supervisor (PhD) student		x	x	x	x		x	x	x		x	x	x
Presentations	<i>Oral presentations for audience</i>	x	x	x				x	x		x	x	x
Grand proposal	<i>National or/and international</i>	x	x				x		x		x		x

¹. The functions and activities are described by the participants themselves

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8. Appendix

8.1 Topics list and interview guide

Table 4 *Topics list (references displayed in the method section)*

Topics	Literature
Leadership knowledge and skills	Leadership improved by mentoring
Career development	Career development and addressing the tripartite role of academic is critical to faculty success
Health and caring	The nurses' health and well- being is improved by mentoring, and the psychological function of mentoring was found as more important than the professional career functioning of mentoring. Balancing between home, work and caring for children is described as challenging for female post-doctoral nurses.
Mentoring	Mentoring is important for the support, learning opportunities, collaboration in research, coauthoring and development of a post- doctoral nurses. The importance of the mentoring quality is also described in literature, as well as the strength of the mentoring relationship.
Collaboration and workload	Literature reveals a negative influence of high workload and teaching commitments and also the negative aspect of working in isolation. Collegial relationships improved as a result of participation in mentoring. The importance of positive support, collaboration and relationship are described.
Research and scholarship productivity	Literature reported a positive impact of leadership and mentoring on research and scholarship productivity.

8.1.1 Interview guide

Topics	Question	Question to participant
Leadership knowledge and skills	<ul style="list-style-type: none"> • What is leadership for the participant? • The influence of leadership and mentoring on the skills of the participant. 	<ul style="list-style-type: none"> • How do you conceptualize leadership in nursing? • What is the influence of leadership and mentoring on the development of your skills as a post-doctoral nurse? <ul style="list-style-type: none"> ○ Can you give an example?
Career development	<ul style="list-style-type: none"> • Career development after doctoral degree? • Role in academic. 	<ul style="list-style-type: none"> • <i>How did you experience your career development after your doctoral degree? (openings question)</i> • Can you give an example of the different roles you have in the academic? • How do you experience the division between the different roles? <ul style="list-style-type: none"> ○ Is there a conflict? ○ How do you handle it?
Mentoring	<ul style="list-style-type: none"> • Has the participant received mentoring? • How is mentoring organized? • How is mentoring experienced? 	<ul style="list-style-type: none"> • Did you receive mentoring after doctoral degree? • How was this mentoring organized and who was involved? • How did you experience the mentoring after your doctoral degree? <ul style="list-style-type: none"> ○ What was helping you? ○ What was bothering you?
Health and caring	<ul style="list-style-type: none"> • Psychological function of mentoring. • Balancing between home, work and possible caring for children. • Facing challenge in Dailey work of the participants. 	<ul style="list-style-type: none"> • How do you describe the psychological function of mentoring in your career development as a doctoral nurse? <ul style="list-style-type: none"> ○ How important was this function for you? • How do you describe the balance between your home, work and if applicable children? <ul style="list-style-type: none"> ○ What was helping you? ○ What was bothering you? • Do you feel challenged in your Dailey work? Please explain. <ul style="list-style-type: none"> ○ Can you give an example?
Collaboration and Workload	<ul style="list-style-type: none"> • The culture in which the participants are working. • The amount of workload and the distribution between roles. 	<ul style="list-style-type: none"> • How is the culture of collaboration between the colleagues? <ul style="list-style-type: none"> ○ Can you give an example? ○ What is helping you? ○ What is bothering you? • How do you describe your workload?

- What are your most important tasks in Dailey work?
- Are the tasks in line with your job description and expectations of your supervisor or bass? Please explain.
- How is the distribution between the tasks?
- Can you give an example?

Topics	Question	Question to participant
Research and Scholarship productivity	<ul style="list-style-type: none"> • The value of research and scholarship productivity for the participants. • The appreciation of their research and scholarship productivity. 	<ul style="list-style-type: none"> • How do you value research and your contribution to research? • How is your scholarship productivity? • What is helping you? • What is bothering you? • Do you receive appreciation for the research you do? Please explain.

8.1 Question in order to achieve maximum variation

1. Name, gender and age.
2. Year of receiving a doctoral degree in Nursing;
3. Current functions or position(s) and the name of the institute(s).