Exploring factors of patient safety at home from the perspective of home care nurses in the Netherlands: A qualitative study

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English Abstract

Title: Exploring factors of patient safety at home from the perspective of home care nurses in the Netherlands: A qualitative study

Background: Despite the increase of home care, literature about patient safety at home and factors that contribute to patient safety at home among frail, older people is limited. Knowing which factors home care nurses believe are affecting patient safety at home is necessary to develop a valid instrument to identify complex situations.

Aim: To explore factors that affect patient safety at home among frail, older people with home care from perceived by home care nurses.

Method: A generic qualitative design was used, and semi-structured interviews were conducted between March and April 2020 in the Netherlands. Interviews were transcribed verbatim following by the thematical analysis of Braun and Clarke.

Results: A total of twelve interviews were conducted by phone. Identified themes were *factors on the patient level*: physical, mental and cognitive factors, emotion and behaviour, patient autonomy affected patient safety at home, *factors on the professional level*: limitations and requirements to ensure patient safety at home by home care nurses, *policy factors*: exterior amenities, amenities inside home and the organization culture affected patient safety at home and *environmental factors*: lack of insight of informal caregivers, involved informal caregivers, lack of informal caregivers, lack of financial resources, house characteristics and unsafe living conditions affected patient safety at home.

Conclusion: Patient autonomy, lack of informal caregivers and their lack of insight, long waiting lists for nursing homes and a lack of guidelines were the main factors determined to affect patient safety at home.

Implication of key findings: Future research should focus on developing evidence-based guidelines to help home care nurses signalling unsafe situations at home. In addition, home care nurses should focus on efficient collaboration with other disciplines to share knowledge about patient safety at home.

Keywords: home care services, home health care nurse, affecting factors, patient safety at home, frail, older people.

Samenvatting

Titel: Factoren over de patiëntveiligheid in de thuissituatie verkennen vanuit het perspectief van wijkverpleegkundigen in Nederland: een kwalitatieve studie.

Achtergrond: Ondanks de stijging van thuiszorg is er weinig bekend in de literatuur en zijn factoren die bijdragen aan de patiëntveiligheid in de thuissituatie bij kwetsbare ouderen onbekend. Wetende welke factoren volgens wijkverpleegkundigen invloed hebben op de patiëntveiligheid kan helpen om in de toekomst een valide instrument te ontwikkelen die de wijkverpleegkundigen helpt een complex situatie te signaleren.

Doelen: Het verkennen van factoren die invloed hebben op de patiëntveiligheid in de thuissituatie bij kwetsbare ouderen, verkregen bij wijkverpleegkundigen.

Methode: Een algemene kwalitatieve studie is gebruikt. Daarbij zijn semigestructureerde interviews uitgevoerd tussen maart en april 2020. Deze interviews zijn getranscribeerd en geanalyseerd met behulp van een thematische analyse.

Resultaten: In totaal zijn er twaalf telefonische interviews gehouden. Thema's: *factoren op patiëntniveau*: fysieke, mentale en cognitieve factoren, autonomie van de client en emotie en gedrag beïnvloeden de patiëntveiligheid in de thuissituatie*, factoren op professioneel niveau*: beperkingen en vereisten voor wijkverpleegkundigen om de patiëntveiligheid in de thuissituatie te waarborgen, *omgevingsfactoren*: gebrek aan inzicht van de mantelzorgers, gebrek aan mantelzorgers en betrokken mantelzorgers beïnvloeden de patiëntveiligheid in de thuissituatie en *beleidsfactoren:* externe voorzieningen, voorzieningen in huis en de organisatorische cultuur hebben invloed op de patiëntveiligheid in de thuissituatie.

Conclusies: De autonomie van de patiënt, het gebrek aan mantelzorg en het gebrek aan hun inzicht, lange wachtlijsten voor verpleeghuizen en gebrek aan richtlijnen waren de belangrijkste factoren die een negatieve invloed hebben op de patiëntveiligheid in de thuissituatie.

Aanbevelingen: Verder onderzoek zou zich moeten focussen op het ontwikkelen van een evidence-based richtlijn om wijkverpleegkundigen te helpen complexe en onveilige thuissituaties te signaleren. Ondertussen in de huidige praktijk zouden wijkverpleegkundigen zich moeten richten op een effectieve samenwerking met andere disciplines en het delen van kennis over patiëntveiligheid in de thuissituatie.

Keywords: Thuiszorg, wijkverpleegkundigen, beïnvloedende factoren, patiëntveiligheid in de thuissituatie en kwetsbare ouderen.

1. Introduction

Patient safety encompasses systems of patient care, reporting reports of mistakes and the initiation of new systems in order to reduce the risk of errors in patient care[1]. According to Berland et al. patient safety at home includes the avoidance, amelioration and prevention of injuries and adverse events[1]. For example, adverse events at home are: adverse drug-events, line-related events such as catheter site infections and catheter occlusion, technology-related events, urinary catheter infections, as well as wounds and falls[2,3]

The literature about patient safety at home in frail, older people is limited. While, the demand for home care and the complexity of care is increasing worldwide due to the ageing population[4,5]. First, ageing is associated with an increased prevalence of chronic conditions, functional decline and frailty, which often results in long-term and complex home care needs[5,6.] Further, most older people prefer to grow old in their own trusted environment[5]. In addition, European countries' governments promote staying at home as long as possible by older people, resulting in a growing demand for home care[5]. Home care is defined as care that is provided by professional careers within the patient's own home[7]. In the Netherlands home care includes nursing care and is mainly provided by registered nurses (bachelor's degree) and certified nursing assistants (associate degree)[8]. It is expected that the number of Dutch frail, older people who are living independently at home will increase from 500.000 up to 1.000.000 in 2030[9]. Given these points, it is important to maintain patient safety at home for frail, older people so that they may successfully age in place[6].

The literature describes frailty as "a distinct clinical syndrome wherein the individual has low reserves and is highly vulnerable to both internal as external stressors."[10] Internal factors are physical and cognitive decline, and external stressors are socioeconomic factors[11]. Frail, older people encounter limitations in multiple domains, which necessitates a look at patient safety at home from a broader perspective[6]. The multiple domains are people's health and functioning (e.g., physical or cognitive decline), their lifestyle and behaviour (e.g., dietary intake, self-care, medication adherence), their social or physical environments (e.g., social isolation, caregiver burden, hazards in the home) and the health and social care they receive (e.g., medication errors, communication failures, fragmentation of care)[6].

Known factors which can guarantee patient safety at home in frail, older people include, for example, the use of shower seats, grab bars, railings, ramps and informal and formal home care[12,13.] Moreover, a lack of caregivers, a lack of a comfortable living environment, a low intelligence quotient (IQ), cognitive and physical decline can have a negative impact on patient safety at home[14–16]. Lang et al. noted with the use of content analysis leadership, employee fatigue and team communication might affect patient safety at home[17]. These factors can be divided into different levels: patient level, environmental level, professional level and policy level. Further, the patients' home environment in which HHCNs practice may influence patient safety at home[2]. An inadequate home environment, increase the risk of adverse events for the patient[2,18]. Therefore, Dutch HHCNs describe the need of a valid instrument to identify complex situations at home[19].

Little is known about Dutch HHCNs' experiences in relation to which factors affecting patient safety at home in frail, older people[19]. Knowing which factors HHCNs believe are affecting patient safety at home is necessary to develop a valid instrument. Furthermore, this can lead to a better understanding what is needed to ensure patient safety at home by HHCNs.

2. Aim

To explore factors that affect patient safety at home among frail, older people with home health care, perceived by home health care nurses.

3. Methods

3.1 Study design

A descriptive generic qualitative study with semi-structured interviews was conducted[20,21].

3.2 Population and setting

HHCNs were included if they were (a) a registered nurse with a bachelor's degree, (b) currently providing home care, (c) had at least a half year of work experience and (d) were able to speak and read Dutch. To increase variation in the sampling, no more than three HHCNs from one organization were included. To increase the representativeness the data, maximum variation sampling was used to obtain diversity with regard to years of working experience as a HHCN, ages and gender[20]. To avoid the risk of a region

influencing the outcomes of the research, HHCNs were approached from all over the Netherlands.

3.3 Sampling

Recruitment started in February 2020. Purposeful sampling was used to recruit a diverse group of HHCNs working in various home care organizations in the Netherlands. The total of HHCNs was determined using data saturation[20]. Selection of eligible participants was done by using the newsletter of the Dutch professional nurses association (V&VN) and the researchers' network. First, an invitation was sent to a contact person at the V&VN. The contact person of the V&VN sent the invitation to the Department of Society and Health. This department is committed to HHCNs, paediatric nurses, nurses of public health and dementia nurses. The different experts operate independently which means that every group of experts has their own activities[22]. The invitation was published in the Department of Society and Health online newsletter of March 2020. This newsletter is sent to approximately 7300 nurses in the Netherlands. It is unknown how many of these were HHCNs. Nevertheless, in 2015 approximately 7.500 HHCNs were operating in the Netherlands[23]. HHCNs were also recruited using the researchers' network. The HHCNs of researchers' network were asked to send the invitation to their home care organization. After receiving a response to the invitation, the information letter was sent by mail. When the researcher received the signed information sheet, the interview was scheduled by phone.

3.4 Data collection

Data was collected between March 2020 and April 2020 using semi-structured interviews. All semi-structured interviews were conducted by phone through logistic and health-related arguments. All interviews were conducted by one researcher.

The interview guide consisted of open questions asking about factors contributing to patient safety at home. The interview guide was based on literature and practical experiences of the researcher[12–16]. All interviews started with the same opening question: "Can you tell me about unsafe situations for frail, older people at home which you encounter as a HHCN?" The topics of the interview guide were perception about patient safety; a case whereby patient safety at home was affected negatively; and the

role played by the HHCN, home care organization, the patient and the informal caregivers in this case. Based on a pilot interview, minor modifications were made to the interview guide. The interview guide is shown in Appendix 1. Baseline characteristics were received prior to the interview.

3.5 Data analysis

All interviews were audio-recorded and transcribed verbatim. For the member check, the researcher sent a summary of the transcribed interview to the participant.

Data was thematically analysed according to the six phases described by Braun and Clarke 2006[24]. This method was chosen to explore the factors affecting patient safety at home among frail, older people since it is a flexible method, independent of theory, that can result in rich and detailed data[21]. A total of three researchers were involved in the process of data analysis, reducing the risk of bias.

In the first phase, all transcripts were read and re-read by the researcher. The first three transcripts were read and re-read by two researchers to familiarize themselves with the data. In the next phase, the first three transcripts were coded independently by the same researchers to enhance the reliability and validity of the study. Based on the first three interviews, initial ideas for coding were discussed by the researchers. A report of the discussion was reviewed. The other transcripts were coded by one researcher and were checked by another researcher. After that the phases ‘searching for themes,’ ‘reviewing themes’ and ‘defining naming themes’ began. All initial codes were collated into potential themes. The potential themes were reviewed. Inconsistencies were discussed by the researchers and were further developed into a thematic map of the data. Furthermore, defined themes were reached on the basis of consensus and quotes were selected based on their effectiveness. Phase six, ‘producing the report,’ followed after completing the aforementioned phases.

The data analysis was supported by NVivo 12.0 software (QSR International NVivo 12.0 software Pro)(25).

3.6 Ethics

This study was conducted in accordance with the principles of the Declaration of Helsinki (Version 2013 October 2013) and the General Data Protection Regulation (GDPR)[26,27]. It was not necessary to obtain further ethical approval since this study did not conduct medical research and does not include interventions or treatments according to the Dutch legislation[28.] During the study, all collected data was handled confidentially. Pursuant to the Personal Data Protection Act, the information sheets were retained[26].

4. Results

The study sample consisted of HHCNs from six different home care organizations throughout the Netherlands. In total 12 HHCNs were interviewed. Eighty-three percent were female, with a mean age of 35 and an average work experience of 4 years. Interviews ranged in duration from 36 to 53 minutes. None of the included participants dropped out from the study. The characteristics of the HHCNs are presented in Table 1.

[Insert Table 1]

A thematic map was created, which is presented in Figure 1. Four main themes were identified based on previous literature: factors on patient level, environmental factors, factors on professional level and policy factors including the Dutch government's policy emerged from the analysis[12–16]. These main themes were divided into nine subordinate themes and seventeen subthemes emerged from the analysis.

[Insert Figure 1]

4.1 Factors on patient level

This main theme included the factors that affects patient safety at home based on the patient's perspective according to the HHCNs. These factors were divided into two subordinate themes: emotional and functional factors.

4.1.1 Emotional factors

Patient autonomy

HHCNs stated that patient autonomy played a significant role in patient safety at home. According to the HHCNs patients did not take control of their own lives. While patients were believing that doing in a safe way by themselves without any professional help. Some patients did not have insight into their own disease and were not able to assess their own situation correctly. Several HHCNs identified care-avoiding behaviour as affecting patient safety at home. These patients did not accept an admission to a nursing home because they did not wish to leave their trusted environment. Some patients did not accept care at home from the professionals or the informal caregivers.

> *'She refused care and the two times we administered medication were the only moments we were allowed to get inside. For the rest she didn't want care' R09*
>
> *'They take control over their own lives, but at any given moment they cannot control their own lives anymore.' R09*
>
> *'These people have lived for 50 years in this house. [….] They don't want to leave their own trusted environment.' R05*

Emotion and behaviour

According to all HHCNs emotion and behaviour played an important role in patient safety at home. Emotions such as aggressiveness, loneliness and fear affected patient safety at home. In the home situation the clients maintained their autonomy which resulting sometimes in alcohol problems whereby people from the area feel unsafe by the behavior of the client.

> *'And he had a son who was addicted to alcohol. And he pulled his father into it. […] So the man was taking medication and then the son came to drink wine or beer together. So the man was at any given time addicted to alcohol too. He drinks wine already at 11/12 o'clock. This results sometimes in dangerous situations such as aggression, not wanting to do anything, or not eating.' R08*

4.1.2 Functional factors

The functional factors were divided into three subthemes: physical factors and consequences, mental factors and cognitive factors and consequences.

Physical factors and consequences

All HHCNs noted the consequences of physical impairments that affected patient safety at home, such as fall incidents or the inability to use the toilet on their own because they were not able to walk and stand up independently.

> *"She is dependent on the wheelchair. She can't walk anymore" R04*
>
> *"Then you usually see if someone is able to go to the toilet independently – yes or no. If someone can't do that independently, than someone is not able to live in the community anymore." R03*

Mental factors, cognitive factors and consequences

All HHCNs explained they found that cognitive impairment, mental health problems and a mental disorder, such as a low IQ, influenced patient safety at home. In most cases cognitive impairment like dementia caused disorientation or the inability to prepare their own meals, remember to eat, or take their medication.

> *"He forgot to eat. He forgot his medication" R08*
>
> *"We try to manage the meals. So either to put a meal in the microwave or to heat meals and put it in front of him. And yes sometimes he eats and sometimes he doesn't want to eat and puts it away." R08*

4.2 Environmental factors

This theme considered the environmental factors affecting patient safety at home according to the HHCNs. The factors were divided into three subordinate themes: the role of informal caregivers, social factors and living environment.

4.2.1 The role of informal caregivers

Involved informal caregivers

All HHCNs emphasized the importance of informal caregivers affecting patient safety at home. Closely involved informal caregivers helped the patient to live independently in a safe way. For example, the informal caregivers helped patients with their daily activities such as preparing meals, shopping and performing administrative tasks. In addition to their current work all HHCNs explained it was not possible to do these activities.

> *"So through the commitment of the involved granddaughter, who was working in the care sector. Well, that was important for us." R01*
>
> *"Well, she had not a referral to a nursing home to get admission to a nursing home yet. […]. The daughter organizes a lot of things for her mum and then I think yes. Imagine that she is not there, than is it impossible to live at home for the women." R07*

Lack of informal caregivers

In some cases HHCNs experienced that informal caregivers were overburdened, which resulted in conflicts with each other or with the HHCNs. Sometimes the patients did not have informal caregivers because they had no family or the family lived far away and were not able to check on them three times a day. This affected patient safety at home according to the HHCNs.

> *"All three children live far away. One daughter lives in Austria [...]" R06*

Lack of insight of informal caregivers

The HHCNs often signalled that roommates affected patient safety at home. For example, if a roommate also had physical or cognitive problems or did not have insight into the patients' situation and rejected professional care. Thereby, most HHCNs noted that a family promised the patient that they would do everything so that the patient could continue living at home. So, the family did not accept admission to a nursing home and the HHCNs were not able to ensure patient safety at home according to few

HHCNs.

> *"The husband rejected professional care. She didn't like the professional care, but yes the house was neglected." R11*
>
> *"They promised once to their mother that she did not have to live in a nursing home" R11*

4.2.2 Social factors

Lack of financial resources

Several HHCNs noted that some patients did not have the financial resources to pay for care or tools inside their homes to ensure patient safety at home. For example, the patient is not able to pay for a physiotherapist or a house renovation or the patient has a limited budget to buy healthy food.

> *"And further he had a small budget of 10 euros per week which he can use to pay for healthy food.'" R10*

4.2.3 Living environment

House characteristics and unsafe living conditions

The HHCNs stated that a safe living environment ensured patient safety at home. This means that the house characteristics and the living environment are hygienic and safe enough to live in. Negative house characteristics include poor, isolated houses or an old stove which did not work whereby the patients live in cold circumstances. Conversely, a chairlift in a ground floor apartment guaranteed safety.

> *"Through the unhygienic situation caused by mice, there was a chance that she was getting ill because of the mice. There is defecation and urine literally everywhere." R05*

4.3 Factors on professional level

This main theme encompasses factors on the professional level influencing patient safety at home perceived by the HHCNs. The factors were divided into two subordinate themes: the role of the home care nurse and the lack of professionals.

4.3.1 The role of the home care nurse

Requirements

All HHCNs stated that in order to ensure patient safety at home it is important to work with other disciplines such as case managers, general practitioners, physiotherapists and occupational therapists. Therefore, most HHCNs noted they were responsible for signalling factors which affect patient safety at home immediately. Most HHCNs started a conversation between informal caregivers and patients about solutions to ensure patient safety at home. In order to start a conversation about solutions, it is important to have a strong relationship with the patient and their informal caregivers, according to several HHCNs. Other requirements to ensure patient safety at home were meetings with colleagues to share experiences and feelings about cases and to ask for some tips to resolve an unsafe situation.

Limiting factors

Several HHCNs stated they were limited by some factors to provide best evidence care which affected patient safety at home. Some patients needed care at the same level as provided in nursing homes. In these cases the HHCNs stated they did not have enough time and money to provide the care that patients needed. Nevertheless, patients do not accept care or admission to the nursing home, which the HHCNs cannot compel them to do. This often results in exceeding their limits by doing work like household tasks. These are tasks that they should not be doing.

> *"Try to do something, building a relation of trust […]. Well they deteriorated more and more. At the beginning they didn't want a personal alarm. But finally after cancelling three times, I was able to arrange for a personal alarm. And so every time we accomplished things." R04*
>
> *"No, no exactly sometimes you want to compel someone. But you can never compel someone." R02*
>
> *"All our professionals believe it is not possible to live at home anymore. And then you hope you can say as an organization we stop the care. It is no longer anymore. It is too much. We exceed our limits." R05*

4.3.2 Lack of professionals

Some HHCNs described that they were not able to ensure patient safety at home because they were understaffed. Several HHCNs noted they work in a hasty manner and forget simple interventions, such as a folding table. In order to resolve the lack of professionals, temporary workers are used. However, one HHCN noted that temporary workers did not have adequate knowledge about the case to signal immediately factors which affected patient safety at home.

> *"The professionals were going to the patient in a hasty manner" R01*
>
> *"We missed the most basic things. Of course we feel […] yes we regret that we missed the most basic things" R01*

4.4 Policy factors

This main theme expressed the influence of organizational and governmental policy on patient safety at home. The factors were divided into two subordinate themes: organizational policy and Dutch government policy.

4.4.1 Organizational policy

Organizational culture

Some HHCNs mentioned it is helpful if the home care organization helps to ensure patient safety at home using different tools. For example, if the organization provides support or gives advice about patient safety at home or a nursing home. The quest for evidence-based guidelines was also mentioned by the HHCNs as a means to improve their skills and knowledge about how to act in unsafe situations.

> *Interviewer: Are there things you are missing from your organization?*
>
> *"Yes I think some guidelines and […] obvious guidelines what you have to do with comorbidity." R09*
>
> *"Yes and already looking for a stay in a nursing home. So within the organization there are intramural settings. So they have looked if there was a stay." R01*

4.4.2. Dutch government policy

Amenities inside home

In the Netherlands, the municipality is responsible for reimbursing interventions which ensure patient safety at home and for renovating the patient's house so they can live at home independently for longer. The HHCNs stated, however, that it took a long time before some interventions from the municipality were realized, resulting in a patient leaving a nursing home to live at home without interventions that ensured the patient safety.

> *"It takes one year until the municipality has completed the renovation." R04*
>
> *" Well, to renovate your house you are depending on the social support act. Social support act, the municipality has to reimburse. But yes, that does not happen 1, 2, 3. And he went home against all professional advices." R04*

Exterior amenities

Even if the patient accepts admission to a nursing home, patients have to live at home longer because of long waiting lists for nursing homes. Furthermore, the nursing homes do not have enough room for all frail, older people.

> *"At the moment you need something, it is not actually there. Or it is full. I understand everything, because the waiting lists are very long, of course." R06*

5. Discussion

This study explored the factors affecting patient safety at home among frail, older people perceived by Dutch HHCNs. Four main themes were identified based on previous literature: factors on patient level, environmental factors, factors on professional level and policy factors including the Dutch government's policy which is emerged from the analysis[12–16.] The data suggests that the main factors which affect the patient safety at home according to the HHCNs were patient autonomy, a lack of informal caregivers and their lack of insight, long waiting lists for nursing homes and a lack of guidelines.

This study described the influence of patient autonomy on patient safety at home. Sometimes patients do not accept the interventions advised by the HHCNs ensure patient safety at home, caused for several reasons, for example, care-avoiding behaviour. This finding is consistent with the results from previous literature[1,2,29]. These studies stated that in the home situation the patient has a greater role in determining how and even if certain interventions will be implemented than in hospitalizations[1,2,29]. Sometimes patients at home will choose to act in ways that are inconsistent with the relevant evidence and professional advice[2].

Another affecting factors in this study are a lack of informal caregivers and the lack of insight by informal caregivers. This study showed a lack of informal caregivers caused by living far away from the patient or overburdening affects the patient safety at home. Thereby, the patient safety is being influenced if a patient is not able to live independently at home according to the HHCNs and informal caregivers will do everything to keep the patient living at home. These findings are in line with previous studies[30,31]. Marck et al. noted the overburdening of the informal caregiver is caused by the feeling of responsibility to attempt to keep the patient at home, without fully appreciating that this objective may be unattainable or unrealistic[30]. Problems in patient safety arise and HHCNs are then responsible to resolve these problems by confronting and talking to informal caregivers[31]. However, conversations with informal caregivers about their limits and insight are perceived as uncomfortable by HHCNs[31]. This implies that during the intake HHCNs should talk about the limits of the informal caregivers and

their own limits to prevent uncomfortable conversations and ensure the patient's safety at home.

For the main theme of policy factors, the lack of guidelines and the long waiting lists for nursing homes were discussed. Most HHCNs in the current study felt the need for guidelines from their organization to improve their knowledge and skills to ensure patient safety at home. The literature shows similar results in institutionalized settings[32–34]. These studies shows education, efficient collaboration and clinical guidelines are crucial to improving patient safety in institutionalized settings[32–34]. In addition, efficient collaboration with HHCN and other disciplines would aid frail, older people in living as long as possible at home[35]. Furthermore, previous studies have also found that nursing homes in the Netherlands are full and have a long waiting list[35–37.] The population of 75-year-olds will increase from 8% to 12% in 2030[38]. This population has fewer informal caregivers due to a reduced social network without children[35]. This offers insight into the increasing waiting lists and too few places in nursing homes, resulting in more complex and unsafe situations at home for frail, older people.

Strengths and limitations

This study was strengthened by using peer review, a member check, and the triangulation of researchers during the analysis and recording interviews. The COnsolidated criteria for REporting Qualitative studies (COREQ) guidelines were used for transparent reporting[39]. To enhance generalizability of the findings, HHCNs were recruited from different home care organizations throughout the Netherlands. Transferability was improved by achieving data saturation on all themes after twelve interviews.

This study has several limitations. First, the interviews were conducted by phone, where making field notes about non-verbal communication is impossible. However, telephonic interviewing is gaining popularity in healthcare research and is a flexible method for data collection[40.] Second, maximum variation was not achieved in regards to work experience. As a result, the sample is not completely representative for the HHCNs in the Netherlands since only nurses with a bachelor's degree were included. Therefore, the results must be considered with caution. To improve the transferability, further

research should include a representative sample of the HHCNs in the Netherlands, including nurses with an associate degree. In addition, the results are not generalizable to other countries because HHCNs there might have other factors affecting patient safety at home.

Implications

As a recommendation, these findings can be used for further research which should focus on developing evidence-based guidelines to help HHCNs signal unsafe situations at home by frail, older people. Meanwhile, in the absence of these guidelines, current practice should focus on expanding professional and efficient collaborations with other disciplines in an effort to develop consensus-based guidelines and to share knowledge about patient safety at home.

Conclusion

The findings of this study provided an improved understanding of factors affecting patient safety at home among frail older people with home health care, perceived by Dutch HHCNs. The perceived factors affecting patient safety at home were patient autonomy, a lack of informal caregivers and their lack of insight, long waiting lists for nursing homes and a lack of guidelines. Ensuring patient safety at home calls for a more efficient collaboration between professionals in order to improve shared knowledge and experience and provide patients with the best of care which should be favourably supported by evidence-based guidelines.

6. References

1. Berland A, Gundersen D, Bentsen SB. Patient safety and falls: A qualitative study of home care nurses in Norway. Nurs Heal Sci. 2012;14(4):452–7.
2. Ellenbecker CH, Samia L, Cushman MJ, Alster K. Patient Safety and Quality in Home Health Care. Patient Saf Qual An Evidence-Based Handb Nurses [Internet]. 2008; Available from: http://www.ncbi.nlm.nih.gov/pubmed/21328733
3. Masotti P, McColl MA, Green M. Adverse events experienced by homecare patients: A scoping review of the literature. Int J Qual Heal Care. 2010;22(2):115–25.
4. Chang AY, Skirbekk VF, Tyrovolas S, Kassebaum NJ, Dieleman JL. Measuring population ageing: an analysis of the Global Burden of Disease Study 2017. Lancet Public Heal [Internet]. 2019;4(3):e159–67. Available from: http://dx.doi.org/10.1016/S2468-2667(19)30019-2
5. De Groot K, Maurits EEM, Francke AL. Attractiveness of working in home care: An online focus group study among nurses. Heal Soc Care Community. 2018;26(1):e94–101.
6. Lette M, Ambugo EA, Hagen TP, Nijpels G, Baan CA, De Bruin SR. Addressing safety risks in integrated care programs for older people living at home: A scoping review. BMC Geriatr. 2020;20(1):1–13.
7. Genet N, Boerma W, Kroneman M, Hutchinson A, Saltman RB. Home Care across Europe - Current structure and future challenges. World Heal Organ. 2012;156.
8. Maurits EEM, de Veer AJE, van der Hoek LS, Francke AL. Autonomous home-care nursing staffare more engaged in their work and less likely to consider leaving the healthcare sector: A questionnaire survey. Int J Nurs Stud [Internet]. 2015;52(12):1816–23. Available from: http://dx.doi.org/10.1016/j.ijnurstu.2015.07.006
9. Verver D, Merten H, De Blok C, Wagner C. A cross sectional study on the different domains of frailty for independent living older adults. BMC Geriatr. 2019;19(1):1–12.
10. Smetcoren AS, Dury S, De Donder L, Dierckx E, De Witte N, Engelborghs S, et al. Detectie en preventie van kwetsbaarheid: Op zoek naar risicoprofielen voor fysieke, psychische, sociale en omgevingskwetsbaarheid. Tijdschr Gerontol Geriatr. 2018;49(1).
11. Chen CY, Gan P, How CH. Approach to frailty in the elderly in primary care and the community. Singapore Med J. 2018;59(5):240–5.
12. Eriksen MD, Greenhalgh-Stanley N, Engelhardt G V. Home safety, accessibility, and elderly health: Evidence from falls. J Urban Econ [Internet]. 2015;87:14–24. Available from: http://dx.doi.org/10.1016/j.jue.2015.02.003
13. Lewis ET, Dent E, Alkhouri H, Kellett J, Williamson M, Asha S, et al. Which frailty scale for patients admitted via Emergency Department? A cohort study. Arch Gerontol Geriatr

[Internet]. 2019;80(October 2018):104–14. Available from: https://doi.org/10.1016/j.archger.2018.11.002

14. Kivimäki T, Stolt M, Charalambous A, Suhonen R. Safety of older people at home: An integrative literature review. Int J Older People Nurs. 2019;(August):1–23.
15. Blais R, Sears NA, Doran D, Ross Baker G, Macdonald M, Mitchell L, et al. Assessing adverse events among home care clients in three Canadian provinces using chart review. BMJ Qual Saf. 2013;22(12):989–97.
16. Gershon RR, Pogorzelska M, Qureshi KA, Stone PW, Canton AN, Samar SM, et al. Home Health Care Patients and Safety Hazards in the Home: Preliminary Findings. Adv Patient Saf New Dir Altern Approaches (Vol 1 Assessment) [Internet]. 2008;1–16. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21249854
17. Lang A, Edwards N, Fleiszer A. Safety in home care: A broadened perspective of patient safety. Int J Qual Heal Care. 2008;20(2):130–5.
18. Hirakawa Y, Kuzuya M, Masuda Y, Enoki H, Iguchi A. Influence of diabetes mellitus on caregiver burden in home care: A report based on the Nagoya Longitudinal Study of the Frail Elderly (NLS-FE). Geriatr Gerontol Int. 2008;8(1):41–7.
19. Bleijenberg N, Hoeijmakers M, Straalen van L, Schuurmans M. Kennisagenda rapport kennisagenda wijkverpleging. V&VN. 2018.
20. Holloway I, Galvin K. Qualitative research in nursing and healthcare. John Wiley & Sons; 2016.
21. Lewis S. Qualitative Inquiry and Research Design: Choosing Among Five Approaches. Vol. 16, Health Promotion Practice. 2015. 473–475 p.
22. V&VN. Beroepsvereniging Verzorgenden Verpleegkundigen [Internet]. 2019. Available from: https://www.venvn.nl/
23. Merwijk C van, Bont M de, Haaren E van, Rosendal H, Wigboldus M. Expertisegebied wijkverpleegkundige [Internet]. 2012. 40 p. Available from: https://www.venvn.nl/Portals/1/Nieuws/2013 Documenten/20121106 Expertisegebied wijkverpl.pdf
24. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.
25. QSR International Pty Ltd. NVivo qualitative data analysis software, version 12. 2018
26. Shabani M, Borry P. Rules for processing genetic data for research purposes in view of the new EU General Data Protection Regulation /706/689/179 /706/689 review-article. Eur J Hum Genet [Internet]. 2018;26(2):149–56. Available from: http://dx.doi.org/10.1038/s41431-017-0045-7

27. Rennie D. Trial registration: A great idea switches from ignored to irresistible. J Am Med Assoc. 2004;292(11):1359–62.
28. Borst-Eilers E, Sorgdrager W. Wet medisch-wetenschappelijk onderzoek met mensen. Geldend van 01-03-2017 t/m heden. 1998;
29. Jacobs G. Patient autonomy in home care: Nurses' relational practices of responsibility. Nurs Ethics. 2019;26(6):1638–53.
30. Marck PB, Lang A, Macdonald M, Griffin M, Easty A, Corsini-Munt S. Safety in home care: A research protocol for studying medication management. Implement Sci. 2010;5(1):1–9.
31. Maseland A, Berends N. Thuis best? Nursing (Lond). 2018;24(1):18–23.
32. Dagley V, Pearson P, Wass V. Patient safety in health care professional educational curricula : examining the learning experience. Patient Saf Educ Study Gr. 2009;(Queen"s Printer and Controller of HMSO):1–214.
33. Steven A, Tella S, Turunen H, Flores Vizcaya-Moreno M, Pérez-Cañaveras RM, Porras J, et al. Shared learning from national to international contexts: a research and innovation collaboration to enhance education for patient safety. J Res Nurs. 2019;24(3–4):149–64.
34. Hovde B, Jensen KH, Alexander GL, Fossum M. Nurses' Use of Computerized Clinical Guidelines to Improve Patient Safety in Hospitals. West J Nurs Res. 2015;37(7):877–98.
35. Commissie Toekomst zorg thuiswonende ouderen. Oud en zelfstandig in 2030 Een reisadvies. 2020;58.
36. Verbeek-Oudijk D., van Campen C. Ouderen in verpleeghuizen en verzorgingshuizen. Soc en Cult Planbur [Internet]. 2017; Available from: https://www.scp.nl/dsresource?objectid=d19ca24f-3008-46e6-a37a...type=org
37. Hinkema M, Heumen S Van, Egter van Wissekerke N. Prognose capaciteitsontwikkeling verpleeghuiszorg. 2019;
38. Sociaal en Cultureel Planbureau. Zorgen voor thuiswonende ouderen. 2019;103.
39. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. Int J Qual Heal Care. 2007;19(6):349–57.
40. Carr EC, Worth A. The use of the telephone interview for research. NT research 2001;6(1):511-524.

Tables

Table 1: Baseline characteristics of the home health care nurses

Respondent	Gender	Age (*range in years*)	Working experience *(range in years)*
R01	Female	31–35	0–5
R02	Male	21–25	0–5
R03	Female	21–25	0–5
R04	Female	41–45	16–20
R05	Female	31–35	6–10
R06	Female	26–30	0–5
R07	Female	21–25	0–5
R08	Female	46–50	0–5
R09	Female	21–25	0–5
R10	Female	51–55	0–5
R11	Female	26–30	0–5
R12	Male	31–35	0–5

Figures

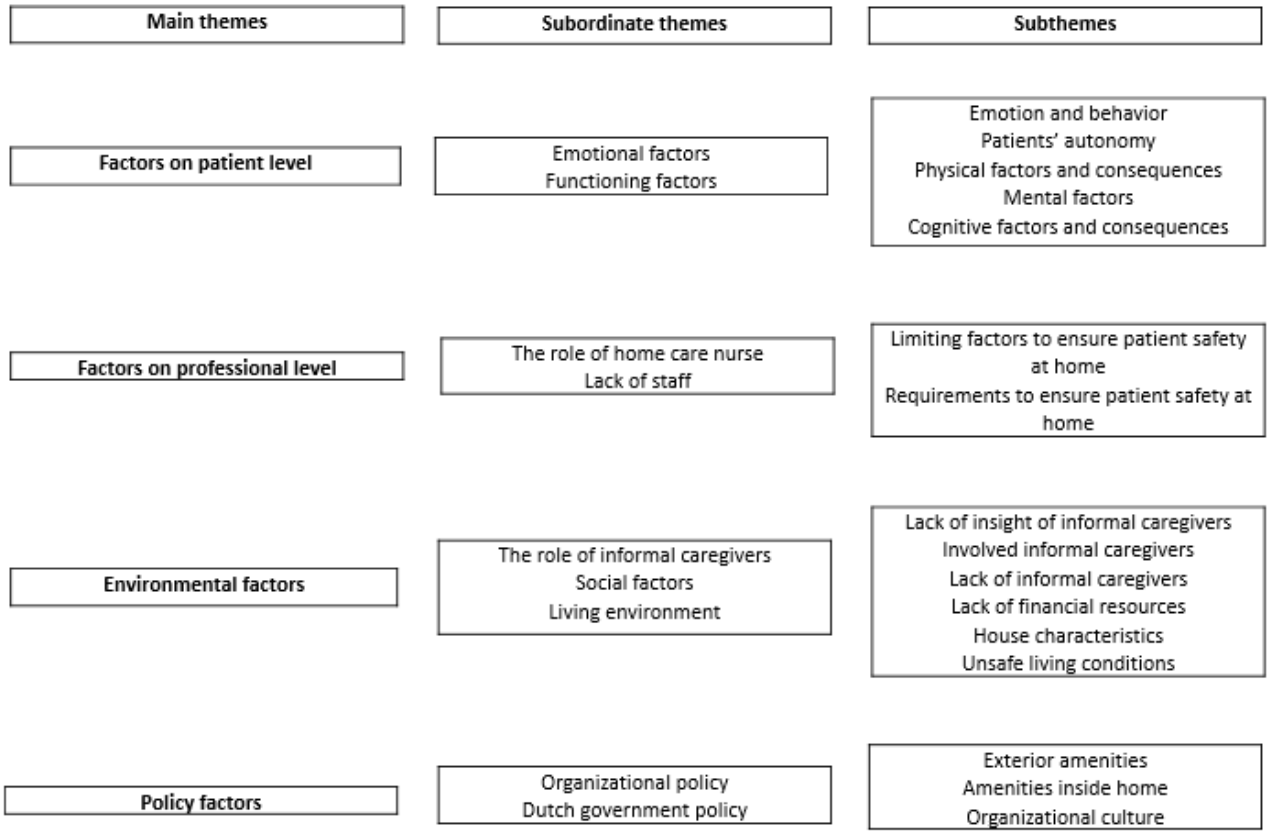

Figure 1: Subthemes, subordinate themes and main themes that emerged from analysing and literature

Appendix 1: Interview guide of the semi-structured interviews with HHCNs

Interview guide	
Topics	Questions
Grand tour question	- Can you tell me about unsafe situations for frail, older people at home which you encounter as a HHCN
Perception about patient safety at home and frail, older people	- What do you understand by patient safety at home? - What do you understand by safety at home? Is this the same definition of patient safety at home? - Can you gave an example of the differences or similarities? - According to the literature, patient safety at home includes the amelioration, avoidance and prevention of injuries and adverse events, for example, fall incidents or medication errors.
Experiences	- Can you give an example of case which affects the patient safety at home for frail, older people who live independently? - What are the reasons that the case was unsafe according to you? - What was the point when the limit was exceeded? - What were the causes of that? - What did you do to prevent an unsafe situation?
Factors on patient level and environmental factors.	- What was the role of the patient in ensuring patient safety at home? - To what extent did patient autonomy play a role in living in unsafe conditions at home? - What was the role of the informal caregivers in the case?
Factors on professional level	- To what extent did factors on the professional level play a role in patient safety at home? - How did the personnel act in the case to ensure patient safety at home?
Factors on policy level	- Which factors play a role to ensure patient safety at home on the organizational level?

	- How did the organization act in the case to ensure patient safety at home? - What could you help assess the situation at home?
Final question: Did we forget to ask anything important?	