

This is an electronic reprint of the original article.

Author(s): Hyvärinen, Satu; Jarva, Erika; Mikkonen, Kristina; Karsikas, Eevi; Koivunen, Kirsi; Kääriäinen, Maria; Meriläinen, Merja; Jounila-Illola, Päivi; Tuomikoski, Annukka; Oikarinen, Anne

Title: Healthcare professionals' experience regarding competencies in specialized and primary stroke units: A qualitative study

Year: 2024

Version: Publisher's versio

License: CC BY

Please cite the original version:

Hyvärinen, S., Jarva, E., Mikkonen, K., Karsikas, E., Koivunen, K., Kääriäinen, M., Meriläinen, M., Jounila-Illola, P., Tuomikoski, A. & Oikarinen, A. (2024). Healthcare professionals' experience regarding competencies in specialized and primary stroke units: A qualitative study. *Journal of Vascular Nursing*, 42(1), 26-34.

<https://doi.org/10.1016/j.jvn.2023.11.006>



ELSEVIER

Contents lists available at ScienceDirect

Journal of Vascular Nursing

journal homepage: www.sciencedirect.com/journal/journal-of-vascular-nursing

Healthcare professionals' experience regarding competencies in specialized and primary stroke units: A qualitative study



Satu Hyvärinen, RN, MSc^a, Erika Jarva, MSc^a, Kristina Mikkonen, PhD, Professor^b,
Eevi Karsikas, MHS^c, Kirsi Koivunen, PhD^d, Maria Kääriäinen, PhD^{b,e},
Merja Meriläinen, PhD^c, Päivi Jounila-Iloila, MHS^d, Annukka Tuomikoski, PhD^d,
Anne Oikarinen, PhD^{a,*}

^a Research Unit of Health Sciences and Technology, Faculty of Medicine, University of Oulu, Medical Research Center Oulu, Oulu University Hospital and University of Oulu, P.O. Box 5000, FI- 90014 University of Oulu, Oulu, Finland

^b Research Unit of Health Sciences and Technology, Faculty of Medicine, University of Oulu, Oulu, Finland

^c Oulu University Hospital, Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland

^d Oulu University of Applied Sciences, Oulu, Finland

^e Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland

Aim: To describe healthcare professionals' experience of needed competence in patient stroke care within specialist and primary healthcare.

Background: Healthcare professionals who provide stroke care need multifaceted, multi-professional skills; ongoing training is important for competent stroke care.

Design: A descriptive qualitative study.

Methods: Six focus group interviews with semi-structured interviews were conducted in October and November 2020. Healthcare professionals ($n = 25$) working in stroke care units in both specialist and primary healthcare settings were interviewed. The interviews were recorded, transcribed and analyzed inductively by content analysis. The study was conducted, and results were reported according to the Consolidated Criteria for Reporting Qualitative Research.

Results: Five main categories were identified: clinical competence; multiprofessional networking competence; competence in interaction skills; emotional and psychoeducational support competence; and self-management and development competence.

Conclusion: Competence in stroke care includes both in-depth and wide-ranging professional competences that require ongoing development. Utilizing various education models and collaborative learning approaches can help meet the requirements for developing competence in stroke care.

Patient or public contribution: No patient or public contribution

© 2023 The Authors. Published by Elsevier Inc. on behalf of Society for Vascular Nursing, Inc.

This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)

Introduction

Stroke is a vascular disease that causes a significant number of injuries and deaths globally.¹ Despite constantly evolving therapies for stroke,^{2,3} the total burden of the disease is increasing^{1,3,4} as a result of population growth and aging, improved survival rates and

substantial increase in exposure to several risk factors. The need for care, rehabilitation and support services for stroke patients is therefore also increasing, which poses challenges for healthcare staff.¹

The consequences of stroke can be transient, long-term or permanent, causing significant functional impairment, and it can

* Corresponding author.

E-mail addresses: satu.m.hyvarinen@pohde.fi (S. Hyvärinen), erika.jarva@oulu.fi (E. Jarva), kristina.mikkonen@oulu.fi (K. Mikkonen), eevi.karsikas@pohde.fi (E. Karsikas), kirsi.koivunen@oamk.fi (K. Koivunen), maria.kaariainen@oulu.fi (M. Kääriäinen), merja.merilainen@pohde.fi (M. Meriläinen), paivi.jounila-ilola@oamk.fi (P. Jounila-Iloila), annukka.tuomikoski@pohde.fi (A. Tuomikoski), anne.oikarinen@oulu.fi (A. Oikarinen).

be fatal.^{3,5,6} When symptoms first present, the need for treatment and care is acute.⁷ Since a patient's condition can change rapidly, members of the healthcare team (including registered nurses, practical nurses, occupational therapists, physical therapists, speech therapists, radiographers, rehabilitation counselors, and paramedics) need the skills and ability to respond as necessary.⁸ Overall, caring for the patients with stroke is a challenging role, and their family members also require support.^{9–12} Multiprofessional collaboration, shared understanding, a rehabilitative approach, and training have all been identified as facilitators of the best possible help and support for patients and their family members.^{13–15}

Knowledge of stroke as a long-term condition is important, as well as the skills to help patients cope by providing targeted and timely counselling and support throughout treatment, and a continuity of treatment across different agencies.^{12,16,17} Rehabilitation plays a vital role in a patient's recovery and survival, and should begin immediately within the hospital and then continued at home as needed. However, globally the implementation and access to rehabilitation services varies widely.⁶

The recurrence rate of stroke is high,¹ but it is possible to reduce this risk by adhering to a healthy lifestyle. Lifestyle counselling should be offered during the hospital phase of treatment and subsequently. Healthcare professionals should be able to demonstrate the link between lifestyle and disease risk, and emphasize how secondary damage can be prevented by improving lifestyle. The adherence of patients to a better lifestyle is promoted through good-quality and patient-centered counselling.¹⁸ In order to reduce the overall burden of stroke, research data are needed on secondary disease prevention strategies, treatment, and prevention.^{3,19}

Expertise in stroke care saves lives, reduces complications, shortens hospital stays and is a prerequisite for achieving optimal treatment results.²⁰ Healthcare professional competence includes the ability to carry out patient-centered care, to work effectively with interdisciplinary groups, and to utilize evidence-based information to improve the quality of care.^{21–23} However, competence is also a complex and constantly evolving combination of contextualized knowledge, skills, attitudes and values. There are general standards for healthcare professionals and metrics to map competence, but the quality, reliability, and measurement characteristics of such metrics vary.²⁴ Stroke care competence is defined by the ability to provide high-quality needs-based patient care throughout the care process, which requires the application of multiprofessional skills.²⁵

Continuous training is essential for professionals in stroke care and the content of training should be updated and provided systematically.²⁵ Stroke care consists of multiple settings and healthcare disciplines encompassing several dimensions of care.²⁵ Healthcare professionals in stroke care require up-to-date knowledge and evidence-based clinical expertise, and it is the responsibility of healthcare providers and organizations to supply both the evidence and evidence-based expertise.²⁶ To obtain more detailed data in order to develop professional competence within the stroke care, more applied research is needed that includes an analysis of current and contextualized experiences, knowledge, skills, attitudes and values. The purpose of this study was to describe healthcare professionals' experience and perspective of required competence in patient stroke care within specialist and primary healthcare. The research question was: What kind of competence do healthcare professionals need and require within patient stroke care in specialist and primary healthcare?

Methods

Design

A descriptive qualitative design based on the philosophy of naturalistic inquiry was chosen to capture health care professionals experience and perspective of required competence in patient stroke care and gain a deeper understanding of a topic by using inductive approaches.²⁷ Focus group interviews were chosen to generate a more comprehensive understanding of the study topic as focus groups can guide development and strengthen insights into the source of behaviors and motivations.²⁸ The study is reported using the consolidated criteria for reporting qualitative research (COREQ) checklist.²⁹

Setting and participants

The study was conducted at two hospital organizations in Finland. These two organizations were selected based on their respective roles in providing specialized and primary healthcare, both of which were integral in the continuum of stroke care—from acute treatment to patient discharge home (Table 1). For the focus group interviews, a purposive sample of healthcare professionals working in stroke care was recruited ($n = 25$). The selection criteria for the participants were: 1) working in stroke care as a professional occupational therapist, physical therapist, speech therapist, registered nurse, practical nurse, radiographer, rehabilitation counsellor or paramedic; and 2) at least one year of work experience in a unit where people suffering from stroke were examined, treated and rehabilitated.

Data collection

Data were collected through semi-structured interviews with focus groups during October and November 2020. Focus group interview as a method of data collection allows the participants to share and discuss their personal experiences and produces rich data in a collective context.^{28,30} The first author contacted potential participants via email to provide them with further information. Potential participants were provided with an information statement prior to voluntary consent. In total, twenty-five participants in six focus groups were interviewed. The focus group interviews were conducted in workplace meeting rooms.

Two researchers facilitated the focus groups: the first researcher moderated, and the second researcher took notes and interjected additional questions when necessary. In order to maintain validity, the same researchers conducted all the interviews. The first researcher was a Master of Nursing Science, and the other researcher was a Doctoral Researcher in Nursing Science. Before starting each interview session, the researchers presented themselves and the purpose of the study. The participants were reminded verbally that participation was voluntary and that they had the right to withdraw at any time. They were given a chance to ask questions about the study.

The interview themes (Table 2.) were based on previous research concerning healthcare professional competence within the stroke care.²⁵ The themes were: stroke patient care, clinical expertise, interaction competence, supporting the patient's self-management and promoting health, supporting the patient's family and competence development. Additional questions based on professional experience were added to elicit more detailed information relating to educational needs. The duration of the sessions

Table 1
Health care professional characteristics.

	All (n = 25)	Primary health care n = 13 (52%)	Specialist care n = 12 (48%)
Profession			
Registered nurse (RN)	8 (32%)	2 (25%)	6 (75%)
Physiotherapist (Pt)	5 (20%)	3 (60%)	2 (40%)
Practical nurse (PN)	4 (16%)	3 (75%)	1 (25%)
Occupational therapist (Ot)	3 (12%)	3 (100%)	–
Speech therapist (ST)	2 (8%)	2 (100%)	–
Paramedic (Pm)	1 (4%)	–	1 (100%)
Radiographer (Rg)	1 (4%)	–	1 (100%)
Rehabilitation counsellor (RC)	1 (4%)	–	1 (100%)
Age in years			
46–55	11 (44%)	7 (28%)	5 (20%)
36–45	5 (20%)	1 (4%)	3 (12%)
56–65	5 (20%)	4 (16%)	1 (4%)
25–35	4 (16%)	1 (4%)	3 (12%)
Sex			
Female	23 (92%)	13 (52%)	10 (48%)
Male	2 (8%)	–	2 (100%)
Professional experience in years			
21–30	9 (36%)	5 (20%)	4 (16%)
1–10	7 (28%)	2 (8%)	5 (20%)
11–20	5 (20%)	3 (12%)	2 (8%)
31–40	4 (16%)	3 (12%)	1 (4%)
Level of education			
University of applied sciences education	19 (76%)		
Upper secondary education	4 (16%)		
Master's degree	2 (8%)		

Table 2
The interview guide.

Theme	Questions
Stroke patient care pathway	Could you share your experiences of your role within the stroke patient care pathway? Could you tell us what kinds of expertise are needed at different stages of the care pathway? How do you feel that your role in the treatment of stroke patients will change in the future? How is multiprofessionalism reflected in different stages of the stroke patient care pathway, and what kinds of expertise does this skill require?
Clinical expertise	Could you share your experiences of which clinical skills are needed to treat a stroke patient? Which clinical skills will be important to the treatment of stroke patients in the future? What kind of supplementary training do you feel you need to provide stroke patients with high-quality care?
Interaction competence	Could you share your experiences of which interaction skills are needed to care for stroke patients? What kinds of expertise are needed to involve a patient in his/her own care and rehabilitation?
Supporting a patient's self-management and promoting health	Could you share your experiences of which self-management skills are needed when counselling a stroke patient?
Supporting the patient's family	Could you share your experiences of what kinds of skills are needed to promote the health of a stroke patient? Could you share your experiences of what kinds of expertise are needed to consider the needs of a stroke patient's family? How should the stroke patient's family be taken into account in the care pathway?
Competence development	Please describe how you would like to develop your own expertise? In your opinion, what kinds of measures are needed to improve the competence development strategy for the treatment of AVH patients?

varied between 69 and 74 min. The interviews were recorded and transcribed verbatim.

Data analysis

The data were analyzed inductively using method of content analysis. Content analysis was chosen because it can provide meaningful descriptions of experiences and perspectives.³¹ The data were read through several times to get familiar with it. Inductive content analysis was then performed according to following phases; data reduction, data grouping and formation of categories.²⁷ An organizing phase involved selecting the units of analysis. That is, the unit of the analysis answered to the research questions and they were classified as open codes. The sub-categories ($n = 29$) were established by combining open codes and assigning descriptive names to represent the content. Subsequently, they were grouped into categories ($n = 13$) and further aggregated into main categories ($n = 5$) as shown in Table 3.

Ethics

The study was undertaken according to research ethics guidelines and the Declaration of Helsinki.³² Research permission was obtained according to the practices of the local hospital district for both the specialist and primary healthcare organizations. Written informed consent was obtained from each participant. The study also complied with the European Union's General Data Protection Regulation.³³ According to legislation in Finland, no ethical committee approval was needed because the study did not involve sensitive topics or vulnerable groups.³⁴

Results

The experiences of healthcare professionals on competence needed in patient stroke care are defined into five main categories: 1) clinical competence; 2) multiprofessional networking competence; 3) competence in interaction skills; 4) competence in

Table 3
Healthcare professionals' needed and required competencies for stroke care in specialty and primary settings.

Main competence	Competence	Sub competence
Clinical competence	Clinical knowledge	*knowledge of stroke as a disease *knowledge of human physiology
	Patient-orientated care	*planning of care *evaluation of care *provision of basic and medical care
	Methodological skills in evidence-based and best practice Rehabilitative foundation	*evidence-based care *best practice in caring environment *optimizing opportunities for rehabilitation *providing rehabilitation *promoting rehabilitation
Multiprofessional networking competence	Collaboration	*having professional identity *co-working
	Networking	*knowing networks *organizing post-hospital care
Competence in interaction skills	Information management	*gaining information *documentation *confirming information
	Communication	*communication with patient and family members *communication in work teams
	Counselling	*patient counselling *family members counselling
	Emotional support	*empathic attitude *supportive attitude
Emotional and psychoeducative support competence	Involving and motivating	*needs-based motivating *involving patient and family members
	Self-management	*decision-making and critical thinking *resilience
Self-management and development competence	Self-management	*updating competence
	Continuous development	*sharing competence

providing emotional and psychoeducative support to patients and their family members; and 5) competence in self-management and development.

Clinical competence

Clinical competence in stroke care included subject knowledge of stroke as a disease; clinical knowledge; patient-oriented care; methodological skills in evidence-based and best practice and skills in rehabilitation.

“Education and adequate know-how are needed. It requires theoretical understanding and practical experience, we need both. We have to understand the physiology of patients with stroke; how to treat these patients in a way that prevents further damage. Because only then the prognosis, postoperative adjustment and recovery can be improved.” (Registered nurse)

Clinical knowledge of stroke as a disease was a prerequisite for experienced clinical competence in stroke care. It was considered necessary to be able to analyze symptoms and identify stroke; detect and interpret warning signs and symptoms; examine and evaluate a patient's condition correctly; and, when necessary, start treatment. Monitoring the level of consciousness and detecting and understanding changes appeared to be important. The ability in utilization of assessment indicators, such as the Glasgow coma scale, was needed. Clinical competence included medical knowledge of human physiology; knowledge of brain function and risk factors, which were needed in monitoring, supporting and correcting patient's vital functions.

“Neurological diseases and stroke patients... there are certain symptoms. Knowledge is needed in understanding these diseases” (Physiotherapist)

“Then, of course, there is the medical regulation of cerebral pressure, deep sleep and relaxation, as well as muscle relaxants, salt

metabolism, and the functions of vital organs, which need to be closely monitored, and all essential functions must be maintained at an optimum level.” (Registered nurse)

Skills in patient-oriented care included planning, evaluation and the provision of basic medical care. The care plan had to be assessed and updated, based on the evaluation and observation of a patient's functions, and continuous monitoring of the patient's overall situation and progress. Planning and evaluation skills also involved reflecting on the professional's own role, whether the skills and ability to implement rehabilitative care to promote recovery were there.

“You start with the patient's history, whether there have been any previous cerebrovascular disorders, how they have been rehabilitated, and then what the condition was before the surgery, and then if any problems are expected.” (Physiotherapist)

“I must be able (as a therapist) to think, whether my approach is right, do I notice everything, do I do the right things, do I know enough, can I meet the needs of this person?” (Physiotherapist)

Provision of basic medical care focused on the patient's needs and resources; taking full care of the patient or making optimal utilization of a patient's own resources by assisting and activating. Pharmacotherapy implementation included administering drugs by different methods, and monitoring and evaluating the effects of the drugs. Possible complications and additional problems that can occur during treatment, such as the disadvantages of bed rest and the risk of aspiration, had to be detected and prevented.

Methodological skills were required for evidence-based care; implementation, providing care in accordance with evidence-based guidelines and best practice in varying situations and stages along a patient's care, as well as the ability to adopt new methods and guidelines. Methodological skills involved managing best practices in caring environments and procedures, with appropriate examina-

tion, preparation and care of the patient in those. It included the ability to take on different roles during procedures, as a part of a team where everyone has their own part to play. Technological skills, the skills in utilization and management of various medical devices and monitoring devices, were closely related with the management of a patient's vital functions, level of consciousness, medication, and nutrition.

"If there are situations where the patient condition gets worse. Then you have to know what to do. That you handle certain acute treatments." (Registered nurse)

"There are situations when a clear division of labor and rules of procedure is needed. Regarding what each will do and at what stage and who will report to whom and who will prepare the next phase..." (Registered nurse)

Patients suffering from a stroke were seen as active participants in their rehabilitation. Rehabilitative foundation means optimizing opportunities and promoting recovery. It was initiated from the point of diagnosis. For stroke survivors with the most severe impairments, rehabilitation involves establishing an environment that enhances functional capacity. Optimizing a patient's rehabilitation opportunities included the immediate utilization of his or her rehabilitation potential. This required skills in planning rehabilitation and the ability to set goals based on a patient's individual starting point.

"We may be wondering why a patient is trying to do something ... what if I give a hint like this, whether it works then? Patient's arms move and the legs move, but then: when (he or she) tries to walk, that left side does not go anywhere. The problems are so diverse. It requires knowledge of what is causing what and how." (Occupational therapist)

Skills in providing rehabilitation manifested as assisting, supporting and guiding, as well as activating and encouraging a patient. The utilization of rehabilitative methods included considering the need for assistive devices, such as orthoses, and their manufacture and manual guidance. Implementing nursing with a rehabilitative approach required a vision of how nursing could be carried out in a patient-oriented, rehabilitative and activating way. The progress of rehabilitation was continuously evaluated. Getting the patient involved in a sometimes long-term and slow-moving rehabilitation process required patience and understanding.

"... rehabilitation-promoting nursing starts exactly when a person has survived a stroke. And it should be given to everyone, wherever it leads or whatever the goal of the treatment is." (Physiotherapist)

Skills in promoting rehabilitation and organizing follow-up rehabilitation when discharged were part of rehabilitative competence. Sharing knowledge and competence in rehabilitation played an important role.

"I must understand (as a therapist) what that further rehabilitation means, what are the concrete means, what should be done in the next phase and in the future. And how to promote progress throughout the whole rehabilitation ... as a competent professional I should be able to, for example, help a physiotherapist working in a follow-up care setting if necessary. If necessary, guide a colleague there." (Physiotherapist)

Multiprofessional networking competence

There was a wide range of collaboration in stroke care, including with the patients, their family members and close ones, as well as other professionals and their respective different core tasks. Multiprofessional networking competence required the ability and

skills in co-working and collaboration; understanding of one's own core task and role in a patient's care, and knowledge of the core tasks and role of other professionals in order to create a common understanding and establish a common goal. The ability to consult with other professionals when necessary and the skill to share knowledge were both seen as essential prerequisites for achieving successful multiprofessional collaboration.

"The perspective (among different occupational groups) is slightly different. Then when you discuss or collaborate, you also strengthen your own area." (Occupational therapist)

Networking competence included knowing the stroke care phases, understanding a patient's individual care path and knowledge of all the services, partners and networks involved. This knowledge was particularly needed for organizing follow-up care and rehabilitation, which also required knowledge of legislation. Organizing social support and peer support extended the competence to networking. Knowledge about the professionals working along the stroke patient's care path, their specific expertise, and job tasks promoted multiprofessional collaboration within networks and reduced barriers for consultations, which was perceived as an advantage.

"With patients and their family members, you gather the network around the patient and map out who is involved. You have to be aware of what someone else is doing in this network. So that the instructions or goals are not contradictory." (Rehabilitation counselor)

Competence in interaction

Competence in interaction skills included information management, communication and counselling. Patient information was compiled from various databases by collecting, searching, observing and querying. Documentation and confirming information, which meant ensuring the accuracy of the documents in the data set and updating them was considered crucial for patient safety, progress along the care path and transfer between treatment units.

"It is emphasized that all information is recorded in the right place. Because we are relying on all that (recorded) knowledge or data. We may not see the people who send the patient to us" (Radiographer)

Competence in interaction included skills in initiating communication with the patient and family members. Building a relationship with a patient and achieving the interaction could require several communication channels in addition to speech, for example touching, manual guidance and the use of communication aids. It was considered important to nurture a sense of security, especially if the patient was unable to communicate verbally. Patients with a severe impairment or in crisis, as well as their family members, could need a speaker or narrator. Nurses and therapists working closely with a patient and family members were told the patient's wishes, given messages, and could provide clarification on medical procedures that were not understood. The professionals needed the skills to react to these demands or clues and act as a mediator and communicator. Family members were generally informed of a patient's current situation because it was considered important.

"We are the ones who inform them. It has become our job to take care of everything ... we must have time to say it all they need to know. We have quite a lot of responsibility." (Practical nurse)

A high level of competence in verbal communication within professional teams is crucial during urgent situations when rapid assessments and decisions are needed for a patient's care.

“There are moments where you have to choose the right words and way to get on, to speak the same language and create a common understanding of the situation. Objectively bring out the core points. Information is shared at many different levels.” (Registered nurse)

Counselling was regarded as fundamental to the interaction. This included a patient’s daily counselling, counselling rehabilitation groups, counselling patients and their family members about accessing information, and lifestyle counselling. It was considered a requirement of the professional role to encourage non-smoking and monitor blood pressure levels.

Emotional and psychoeducational support competence

Emotional and psychoeducational support within stroke care was experienced to require an empathic and supportive attitude, abilities in involving and motivating; recognizing patient and family member distress and having the skills to respond to it. Identifying and facing an acute crisis caused by stroke required sensitivity and the ability to discuss difficult issues. Often, the distress of family members was addressed by providing information; it was felt that worries were compounded by uncertainty about the future and uncertainty about care. Emotionally supportive methods included listening, distribution of information, supporting, encouragement and, if needed, addressing multiple problems without condemnation. When further support was needed, a psychiatric nurse was consulted or family members were encouraged to seek help from occupational healthcare. Emotional support was seen as caring for the whole family as a unit, to strengthen their faith in a future.

“When a person becomes acutely ill, there is tremendous concern. The family is worried. The patient has anxiety about what will happen. Our main task is to stay calm and create the feeling that we are moving forward step by step. Cooperation is everything.” (Occupational therapist)

“After all, it affects everyone, including those close to the patient. It is one of our most important tasks to face the involved family members involved and a in professional yet empathetic manner, guide them, inform them about the situation, and also give help”. (Registered nurse)

Involving and motivating patients to act as promoters of their own recovery and rehabilitation required recognition of a patient’s values and the ability to help him or her set goals, moving towards those goals or sub-goals, and offering alternatives if needed. An ability to engender an understanding of the overall situation, the need for care, and the importance of treatment, was needed. It was recognized that family members often need to participate in care and thereby become involved in helping and making themselves useful. In such cases, the family members had to be guided to assist in activities safely. Motivation required constant encouragement.

“Small exercises are usually directed at family members. Kind of activities, for example how you can assist with meals. That will be the easiest way and the most motivating. You always think about them together, and somehow try to give their family members tools for the current situation.” (Practical nurse)

“It’s just ruthless encouragement and praise!” (Practical nurse)

Self-management and continuous development competence

The stroke care was delivered in various settings and organizational environments. The professionals encountered each other at

several interfaces. Self-management was experienced as decision-making and critical thinking; the ability in providing equal care and rehabilitation, organizing and prioritizing tasks.

Resilience was needed in diverse and unexpected situations that required skill in operating under pressure. Skills in solving multiple problems and separating the essential from the irrelevant were also necessary.

“There are many things involved, we have to be fast, but we also have to be able to figure out what is more important here right now and how fast we are to prevent further injuries ... Everybody is expected to ‘check everything’ out.” (Registered nurse)

Health care professionals working in stroke care experienced that it was necessary to accept a feeling of inadequacy, with the understanding and acceptance that a patient will not always recover or that lifestyle counselling will not be embraced. Experiencing inadequacy during lifestyle counselling and inadequate preventive measures caused worries about the future.

“Some young people have lifestyles that are quite miserable. Which is a big risk factor. It is a time bomb for treatment. At the moment, we should invest in lifestyle guidance and try to influence them, young people.” (Practical nurse)

Continuous development included updating and sharing competence basis in identifying shortcomings in their own professional skills and maintaining competence. Wider subject knowledge was needed, from outside their personal professional group. Expertise and experience in stroke care were valued.

“I think that the most rewarding trainings are those that involve multiple professional groups.” (Registered nurse)

“Tacit knowledge can be valuable. But in my opinion, this kind of tacit knowledge can also be quite dangerous. It should somehow be possible to share it with everyone. Somehow make it possible for the knowledge to transfer from the experienced individuals to the newcomers and not remain so silent. (Registered nurse)

The ability to examine their own processes critically, and adopt new behavior and change old behaviors, was needed, for example if a patient’s care and rehabilitation did not progress as expected. The development of treatment methods also required monitoring and learning new methods.

Discussion

The findings of this qualitative study indicate that professionals in stroke care experience that they are required to have multifaceted clinical competence with a specialized but also wide-ranging subject knowledge as a basis. As Lejonqvist et al.²² described, clinical competence is a process rather than a static stage. When the foundation in ontological clinical competence is ongoing and independent of clinical practices, it makes adaptation to changing situations easier because the basic structure facilitates learning variations. Effective stroke care and the development of professional clinical competence necessitate expertise in both nursing and rehabilitation. Healthcare professionals emphasize the critical importance of a comprehensive understanding of stroke across the entire continuum of care. It was evident that the principles of stroke patient rehabilitation had to be integrated into nursing and assessed as the focus of care. There is a need to acknowledge healthcare professionals’ educational needs and to place a greater emphasis on providing continuing education. The content of education programs may not support the development of specialized competence.²⁵

The findings of this study show that organizing a stroke patient's post-hospital care starts during hospitalization and requires expertise in areas such as social work and rehabilitation legislation. Application of professional's competence in stroke care is achieved through multiprofessional collaboration. Competent professionals embrace other professional perspectives, and understand the roles of all professionals in stroke care by recognizing both their own skills²⁰ and those of others. It has been established that optimum patient outcomes are achieved with highly specialized nursing input, and high-quality interdisciplinary care provides a comprehensive, interactive, and holistic approach to both acute stroke and rehabilitation.^{20,35} Co-location of teams and workplace proximity, in particular therapists and nurses, promotes interdisciplinary collaboration by increasing the level of communication, rehabilitation-focused dialog and joint working in a stroke and rehabilitation setting.¹³

As in previous studies,³⁶ skills in communication, establishing a relationship with patients and their family members, and engaging the patient were described as elements of interaction competence in stroke care. Basic communication skills such as a dialog with the patient^{36,37} and being able to utilize non-verbal communication³⁶ are important aspects of interaction competence, as well as dialog with other professionals. In addition, this study analyzed information management as a method of interaction. Importantly, compiling information was described as assembling all the pieces of a puzzle. Improvements were suggested for safer, more uniform and simplified technology-based communication, data retention, data utilization and transfer.

People affected by stroke undergo multiple complex processes.¹¹ The ability to support people affected by stroke emotionally and psychoeducatively is needed at all stages of care, and the healthcare professional's supportive role is both vital and challenging. The rehabilitation potential of a stroke survivor depends on the extent to which family members are engaged, willing, and capable of providing support and care.⁹ It has also been proven^{10,38} that psychoeducational training for stroke survivor care gives improves their well-being. In line with previous study,⁹ this study revealed that dealing with a patient's family members can be perceived as a stressful and demanding task, but family members are also seen as a resource. Information provision and its timing were found to be critically important.

It is suggested that co-operation between specialist medical care and primary healthcare increases the patient and family member experience of being cared for.¹⁷ Based on this study, more intensive co-operation would also strengthen the professional experience of competence. While universal development towards organized stroke unit care within a specialist medical setting has emphasized the reduction of length of stay and focused on hyperacute models,³⁹ the pressure for early discharge puts pressure on primary healthcare to treat stroke patients at an early stage. Sharing stroke-specific knowledge³⁹ and experience between specialist medical and primary healthcare needs to be emphasized. Qualified stroke care requires co-operation between organizations. Teamwork education programs with practical authentic learning opportunities, reflection and debriefing have increased professional confidence and the motivation to apply new teamwork skills to daily practice.¹⁵ In this study, the health professionals working on the stroke care described a need to develop and update their skills and competence continuously through training and education, and they also recognized the need for stroke care development. A need for joint training was identified and seen as a way to share knowledge.

Barriers to implementing quality care within organizations have been identified and reported previously, such as insufficient time, staff, and environmental resources.^{25,39–41} In this study, interpro-

fessional co-operation was similarly affected. Inadequate opportunities for healthcare professional development, a lack of specialized competence in stroke care, and workload demands were mentioned as challenges to the implementation of evidence-based and good-quality care, which is also in line with previous studies.²⁶ Resilience⁴² and tolerating work stress were described as self-management. As the burden of stroke within healthcare is increasing, so is concern among healthcare professionals. General lifestyle interventions may be insufficient. There is evidence that more targeted and interactive counselling is beneficial^{16,43} and should be invested in. There is a need for more effective preventative lifestyle counseling, as well as prevention strategies aimed at lowering the risk of cardiovascular diseases and raising awareness of risks among new groups, particularly among young people, in order to alleviate the burden of stroke.^{1,44}

Strengths and limitations

To ensure the rigor and trustworthiness of the content analysis, the methodological concept credibility, dependability, confirmability, authenticity and transferability were assessed.³¹ As a confidential basis of credibility, the research process was carefully designed and participants were assumed to have a good knowledge of the research topic. All the professional groups identified in the criteria were represented. Encompassing a range of ages, work experience and gender, they therefore formed a representative sample of healthcare professionals within stroke care. The number of informants ($n = 25$) was sufficient for assessing the credibility, as a saturation point was reached.^{30,31} The interview themes and questions were kept broad and open-ended to allow a wide range of information and spontaneous descriptions of the subject to be discussed. The first author analyzed the data independently and assessed how the data answered the research question. The first author's experience in stroke care may have influenced the understanding of the topic, but objectivity was applied during each phase of the study. Written notes were used and a dialog with other researchers was used to ensure objectivity and strengthen dependability and confirmability.³¹ A table of the categorization process was included. Citations from different participants were used to demonstrate the connection between the results and the data as well as to add value and authentication.^{31,45}

Relevance to clinical practice

This study offers current and in-depth insights into the competence healthcare professionals acquire while working in stroke care within specialist and primary healthcare settings. The development of multiprofessional competence for healthcare graduates should be integrated into stroke care right from the beginning of their careers. There is a growing demand for increased collaboration between healthcare organizations and joint education initiatives. Additionally, there should be a stronger emphasis on developing innovative methods for preventing risk factors across all age groups. This information is crucial for enhancing the competence of healthcare professionals in stroke care, and the findings can be applied to assess stroke care comprehensively, improve care pathways, and support ongoing professional and educational development in stroke care.

Conclusions

The study suggests that competence in stroke care necessitates interpersonal skills in diverse settings for vascular nurses and other health care professionals, and multiprofessional collaboration

among occupational therapists, physical therapists, speech therapists, practical nurses, radiographers, rehabilitation counselors, and paramedics. Furthermore, clinical competence depends on a strong theoretical understanding and knowledge of stroke as a disease. Individuals affected by stroke often require substantial emotional support, which healthcare professionals aim to provide through various methods, drawing on their expertise. Competence in self-management and continuous development in one's own profession requires an independent approach to self-assessment regarding personal tasks and skills, as well as the ability to face various challenges. Additionally, it relies on support from the organization and leadership.

Continuous training is essential for healthcare professionals in stroke care, and the content of training should be regularly updated and provided systematically. Healthcare professionals share a common understanding of the demanding competencies required in stroke care and the necessity for expertise and ongoing development.

Funding

None

Data availability statement

Author elects to not share data.

Author contributions

Criteria

Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data;

Involved in drafting the manuscript or revising it critically for important intellectual content;

Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content;

Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Author Initials

SH, AO, EJ, AT, KM

SH, AO, EJ, AT, KM, MK, KK, MM

SH, AO, EJ, AT, KM, MK, KK, PJ-I, EK, MM

SH, AO, EJ, AT, KM, MK, KK, PJ-I, EK, MM

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

We wish to thank all the healthcare professionals who generously shared their experiences.

References

- Global Burden of disease, Injuries and Risk Factors Study GBD (2019) Stroke CollaboratorsGlobal, regional, and national burden of stroke and its risk factors, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet Neurol.* 2021;20(10):795–820. [https://www.thelancet.com/journals/lanneur/article/PIIS1474-4422\(21\)00252-0/fulltext](https://www.thelancet.com/journals/lanneur/article/PIIS1474-4422(21)00252-0/fulltext). doi:10.1016/S1474-4422(21)00252-0.
- Campbell BCV, Mitchell PJ, Churilov L, Keshtkaran M, Hong KS, Kleinig TJ, et al. EXTEND-IA Investigators. Endovascular Thrombectomy for Ischemic Stroke Increases Disability-Free Survival, Quality of Life, and Life Expectancy and Reduces Cost. *Front Neurol.* 2017;14(8):657. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5735082/>. doi:10.3389/fneur.2017.00657.
- Virani S, Alonso A, Aparicio H, Benjamin E, Bittencourt M, Callaway C, et al. American Heart Association Council on epidemiology and prevention statistics Committee and stroke statistics subcommittee. *Circulation.* 2021;143(8):e254–e743. doi:10.1161/CIR.0000000000000950.
- Wafa H, Wolfe C, Emmet E, Roth G, Johnson C, Wang Y, et al. Burden of stroke in Europe. Thirty-year projections of incidence, prevalence, deaths, and disability-adjusted life years. *Stroke.* 2020;51(8):2418–2427. doi:10.1161/STROKEAHA.120.029606.
- Adeoye O, Nyström KV, Yavagal DR, et al. Recommendations for the establishment of stroke systems of care: a 2019 update: a policy statement from the American Stroke Association. *Stroke.* 2019;50:e187–e210. doi:10.1161/STR.0000000000000173.
- GBD 2016 Stroke CollaboratorsGlobal, regional, and national burden of stroke, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Neurol.* 2019;48:439–458.
- Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, et al. Guidelines for the early management of patients with acute ischemic stroke: 2019 update to the 2018 guidelines for the early management of acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke.* 2019;50:e344–e418. <https://www.ahajournals.org/doi/10.1161/STR.0000000000000211>.
- Boling B, Groves TR. Management of Subarachnoid Hemorrhage. *Crit Care Nurse.* 2019;39(5):58–67. doi:10.4037/ccn2019882.
- Aadal L, Angel S, Langhorn L, Pedersen BB, Dreyer P. Nursing roles and functions addressing relatives during in-hospital rehabilitation following stroke. Care needs and involvement. *Scand J Caring Sci.* 2018;32(2):871–879. <https://onlinelibrary.wiley.com/doi/10.1111/scs.12518>.
- Cheng HY, Chair SY, Chau JPC. Effectiveness of a strength-oriented psychoeducation on caregiving competence, problem-solving abilities, psychosocial outcomes and physical health among family caregiver of stroke survivors: a randomised controlled trial. *Int J Nurs Stud.* 2018;87:84–93. doi:10.1016/j.ijnurstu.2018.07.005.
- Theadom A, Rutherford S, Kent B, McPherson KARCOS IV Group. The process of adjustment over time following stroke: a longitudinal qualitative study. *Neuropsychol Rehabil.* 2019;29(9):1464–1474. doi:10.1080/09602011.2018.1440609.
- Rashidi A, Kaistha P, Whitehead L, Robinson S. Factors that influence adherence to treatment plans amongst people living with cardiovascular disease: a review of published qualitative research studies. *Int J Nurs Stud.* 2020;110:103727. <https://www.sciencedirect.com/science/article/pii/S0020748920302133>. doi:10.1016/j.ijnurstu.2020.103727.
- Clarke DJ. Nursing practice in stroke rehabilitation: systematic review and meta-ethnography. *J Clin Nurs.* 2014;23(9–10):1201–1226. doi:10.1111/jocn.12334.
- Clarke DJ, Holt J. Understanding nursing practice in stroke units: a Q-methodological study. *Disabil Rehabil.* 2015;37(20):1870–1880. doi:10.3109/09638288.2014.986588.
- Eddy K, Jordan Z, Stephenson M. Health professionals' experience of teamwork education in acute hospital settings: a systematic review of qualitative literature. *JBI Database System Rev Implement Rep.* 2016;14(4):96–137. https://journals.lww.com/jbisrir/Abstract/2016/04000/Health_professionals_experience_of_teamwork.12.aspx. doi:10.11124/JBISRIIR-2016-1843.
- Oikarinen A, Engblom J, Kääriäinen M, Kyngäs H. The effects of Risk Factor-Targeted Lifestyle Counselling Intervention on working-age stroke patients' adherence to lifestyle change. *Scand J Caring Sci.* 2017;31(3):555–568. doi:10.1111/scs.12369.
- Pindus DM, Mullis R, Lim L, et al. Stroke survivors' and informal caregivers' experiences of primary care and community healthcare services - A systematic review and meta-ethnography. *PLoS One.* 2018;21(2):e0192533 13. doi:10.1371/journal.pone.0192533.
- Oikarinen A, Engblom J, Paukkonen L, Kääriäinen M, Kaakinen P, Kähkönen O. Effects of a lifestyle counselling intervention on adherence to lifestyle changes 7 years after stroke - A quasi-experimental study. *Scand J Caring Sci.* 2023;37(1):163–172. doi:10.1111/scs.13101.
- Tulek Z, Poulsen I, Gillis K, Jönsson AC. Nursing care for stroke patients: a survey of current practice in 11 European countries. *J Clin Nurs.* 2018;27(3–4):684–693. doi:10.1111/jocn.14017.
- Theofanidis D, Gibbon B. Nursing interventions in stroke care delivery: an evidence-based clinical review. *J Vasc Nurs.* 2016;34(4):144–151 Dec. doi:10.1016/j.jvn.2016.07.001.
- Cowan D, Norman I, Coopamah V. Competence in nursing practice: a controversial concept – a focused review of literature. *Nurs Educ Today.* 2005;25:355–362. doi:10.1016/j.nedt.2005.03.002.
- Lejonqvist GB, Eriksson K, Meretoja R. Evidence of clinical competence. *Scand J Caring Sci.* 2012;26(2):340–348 Jun. doi:10.1111/j.1471-6712.2011.00939.x.
- Eriksson E., Korhonen T., Merasto M., Moisio E.-L. Nurses professional competence – Nursing Education Future – Project (in Finnish). 2015. Ammattikorkeakoulujen terveysalan verkosto ja Suomen sairaanhoitajaliitto ry. <https://www.epressi.com/media/userfiles/15014/1442254031/loppuraportti-sairaanhoitajan-ammattillinen-osaaminen.pdf>

24. Charette M, McKenna LG, Maheu-Cadotte MA, Deschênes MF, Ha L, Merisier S. Measurement properties of scales assessing new graduate nurses' clinical competence: a systematic review of psychometric properties. *Int J Nurs Stud*. 2020;110:103734. doi:10.1016/j.ijnurstu.2020.103734.
25. Jarva E, Mikkonen K, Tuomikoski AM, Kääriäinen M, Meriläinen M, Karsikas E, et al. Healthcare professionals' competence in stroke care pathways: a mixed-methods systematic review. *J Clin Nurs*. 2021;30(9–0):1206–1235. doi:10.1111/jocn.15612.
26. Baatiema L, Otim ME, Mnatzaganian G, de-Graft Aikins A, Coombes J, Somerset S. Health professionals' views on the barriers and enablers to evidence-based practice for acute stroke care: a systematic review. *Implement Sci*. 2017;5(1):74–12. doi:10.1186/s13012-017-0599-3.
27. Kyngäs H. *Application of Content Analysis in Nursing Science Research. Qualitative research and content analysis*. Switzerland: Springer; 2020.
28. Jayasekara RS. Focus groups in nursing research: methodological perspectives. *Nurs Outlook*. 2012;60(6):411–416. doi:10.1016/j.outlook.2012.02.001.
29. 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 Health Care*. 2007;19(6):349–357. doi:10.1093/intqhc/mzm042.
30. Polit DF, Beck CT. *Nursing Research Generating and Assessing Evidence For Nursing Practice*. 10th ed. Philadelphia, PA: Wolters Kluwer Health; 2017.
31. Kyngäs H, Kääriäinen M, Elo S. *Application of Content Analysis in Nursing Science Research. The trustworthiness of content analysis*. Switzerland: Springer; 2020.
32. World Medical Association Declaration of Helsinki - ethical principles for medical research involving human subjects. *JAMA*. 2013;310:2191–2194.
33. General Data Protection. Regulation (EU) 2016/679 of the European parliament and of the council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC. <https://eur-lex.europa.eu/eli/reg/2016/679/oj>
34. Personal Data Act 523/1999. Ministry of Justice. Finland. URL: <http://www.finlex.fi/en/laki/kaannokset/1999/19990523>.
35. Langhorne P, Lewsey JD, Jhund PS, Gillies M, Chalmers JW, Redpath A, et al. Estimating the impact of stroke unit care in a whole population: an epidemiological study using routine data. *J Neurol Neurosurg Psychiatry*. 2010;81(12):1301–1305. doi:10.1136/jnnp.2009.195131.
36. Bright FAS, Kayes NM, McPherson KM, Worrall LE. Engaging people experiencing communication disability in stroke rehabilitation: a qualitative study. *Int J Lang Commun Disord*. 2018;53(5):981–994. doi:10.1111/1460-6984.12409.
37. O'Halloran R, Grohn B, Worrall L. Environmental factors that influence communication for patients with a communication disability in acute hospital stroke units: a qualitative metasynthesis. *Arch Phys Med Rehabil*. 2012;93:S77–S85. doi:10.1016/j.apmr.2011.06.039.
38. Verbrne DPJ, Kroese MEAL, Staals J, Ponds RWHM, van Heugten CM. Nurse-led stroke aftercare addressing long-term psychosocial outcome: a comparison to care-as-usual. *Disabil Rehabil*. 2022;44(12):2849–2857. doi:10.1080/09638288.2020.1849417.
39. Ryan T, Harrison M, Gardiner C, Jones A. Challenges in building interpersonal care in organized hospital stroke units: the perspectives of stroke survivors, family caregivers and the multidisciplinary team. *J Adv Nurs*. 2017;73(10):2351–2360. doi:10.1111/jan.13313.
40. Craig LE, McInnes E, Taylor N, et al. Identifying the barriers and enablers for a triage, treatment, and transfer clinical intervention to manage acute stroke patients in the emergency department: a systematic review using the theoretical domains framework (TDF). *Implement Sci*. 2016;28(1):157–11. doi:10.1186/s13012-016-0524-1.
41. Balasooriya-Smeekens C, Bateman A, Mant J, De Simoni A. How primary care can help survivors of transient ischaemic attack and stroke return to work: focus groups with stakeholders from a UK community. *Br J Gen Pract*. 2020;26(693):e294–e302 70. doi:10.3399/bjgp20X708149.
42. Delgado C, Upton D, Ranse K, Furness T, Foster K. Nurses' resilience and the emotional labour of nursing work: an integrative review of empirical literature. *Int J Nurs Stud*. 2017;70:71–88. doi:10.1016/j.ijnurstu.2017.02.008.
43. Hendrickx W, Vlietstra L, Valkenet K, et al. General lifestyle interventions on their own seem insufficient to improve the level of physical activity after stroke or TIA: a systematic review. *BMC Neurol*. 2020;1(1):168–20. doi:10.1186/s12883-020-01730-3.
44. Li L, Scott CA, Rothwell PM. Association of Younger vs Older Ages With Changes in Incidence of Stroke and Other Vascular Events, 2002–2018. *JAMA*. 2022;328(6):563–574. doi:10.1001/jama.2022.12759.
45. Elo S, Kääriäinen M, Kanste O, Pölkki T, Utriainen K, Kyngäs H. *Qualitative Content Analysis: A Focus On Trustworthiness* SAGE Open; 2014:1–4. doi:10.1177/2158244014522633.