For research article

Response to Reviewer X Comments

1. Summary

Dear reviewer

Thank you very much for your valuable and helpful comments on our manuscript. Your feedback is in black, our replies are in blue and the changes are written in red.

2. Questions for General Evaluation	**Reviewer's Evaluation**	**Response and Revisions**
Does the introduction provide sufficient background and include all relevant references?	Yes/Can be improved/Must be improved/Not applicable	*[Please give your response if necessary. Or you can also give your corresponding response in the point-by-point response letter. The same as below]*
Are all the cited references relevant to the research?	Yes/Can be improved/Must be improved/Not applicable	
Is the research design appropriate?	Yes/Can be improved/Must be improved/Not applicable	
Are the methods adequately described?	Yes/Can be improved/Must be improved/Not applicable	
Are the results clearly presented?	Yes/Can be improved/Must be improved/Not applicable	
Are the conclusions supported by the results?	Yes/Can be improved/Must be improved/Not applicable	

3. Point-by-point response to Comments and Suggestions for Authors

Comments 1: Objective is overly broad and conceptually overloaded as the study simultaneously explores competencies, components, and framework conditions without clearly prioritizing the primary phenomenon of interest.

Response 1:

Thank you for this important comment. The study does not aim to pursue multiple independent research objectives. Rather, it follows an exploratory qualitative design that primarily focuses on the experiences of APNs working in APN-led clinics. Competencies, role components, challenges, and contextual conditions are understood as aspects that may emerge from these experiences during the analysis. The conceptual understanding of the APN role is therefore not intended as a separate research objective, but rather as an interpretative outcome grounded in the empirical data.

Comments 2: The title suggests exploration of APNs' experiences, but the objective shifts toward developing an APN role concept. These are distinct qualitative aims.

Response 2:

We thank the reviewer for this insightful comment. The overarching research interest is to develop an APN role concept. For this, the perspectives of APNs are essential. Therefore, the aim of this sub-study is to explore the perspectives of APNs in the context of the planned development of an APN role in an APN-led clinic in a hospital setting. Accordingly, the research focused on exploring competencies, components, and framework conditions from the perspectives of APNs.

The following paragraph is included in the introduction of the manuscript:

To begin addressing this evidence and practice gap, and to inform the development of such a model of care within the Swiss healthcare system, the aim of this study is to explore the perspectives of APNs in the context of the planned development of an APN role in an APN-led clinic. Therefore, the research focused on exploring competencies, components, and framework conditions from the perspectives of APNs. The research question to be investigated was the following: From the perspective of APNs, what competencies, components, and framework conditions are necessary for the development of this APN role concept?

Comment 3: The study alternates between "hospital setting," "clinical setting," and "APN-led clinic," creating uncertainty regarding the exact setting under investigation.

Response 3:

We acknowledge the reviewer's important comment regarding inconsistency in the terminology used to describe the study setting. We agree that the alternating use of "hospital setting," "clinical setting," and "APN-led clinic" may have created ambiguity regarding the exact context of the study. To address this issue, the manuscript has been revised to use a

consistent terminology throughout. The study setting is now consistently referred to as an "APN-led clinic within a hospital setting" in order to clearly reflect the specific organizational and clinical context of the study

Comment 4: Qualitative descriptive studies usually emphasize low interpretation, whereas reflexive thematic analysis (Braun & Clarke) is interpretive/constructivist. Philosophical alignment is unclear.

Response 4:

We thank the reviewer for this comment. It is true that the initially used term "qualitative-descriptive" was misleading in this context. As the study is grounded in the paradigm of Braun and Clarke, we have removed the term "descriptive" from the manuscript. The sentence in the revised manuscript now reads as follows:

In order to gain insight into the experiences of APNs caring for young and middle-aged adults with multimorbidity and complex chronic conditions in a hospital setting, we chose a qualitative design in line with Braun and Clarke´s (2022) reflexive thematic analysis [51].

Comment 5: The authors never specify whether the study follows constructivist, interpretivist, or pragmatic paradigms, which is essential in qualitative research.

Response 5:

We thank the reviewer for this comment. As already mentioned in point 1, the entire study is based on the paradigm of Braun and Clarke (2022).

Comment 6: Combining APNs from Switzerland, USA, and Canada introduces major contextual heterogeneity. Healthcare structures, APN regulations, reimbursement systems, and scopes of practice differ substantially.

Response 6:

We acknowledge the reviewer's important observation regarding the contextual heterogeneity introduced by including APNs from Switzerland, the United States, and Canada. Indeed, healthcare system structures, regulatory frameworks, reimbursement models, and scopes of practice differ substantially across these settings. However, this heterogeneity was

intentionally accepted, as it was considered methodologically valuable for the aims of the study. In Switzerland, Advanced Practice Nurses (APNs) provide care for younger and middle-aged adults with multimorbidity and complex chronic conditions in similar healthcare settings; however, APN-led inpatient clinics within hospitals are not yet established. Therefore, additional APNs from the United States and Canada were recruited, as they work in such settings and have extensive experience in APN-led clinics managing younger and middle-aged patients with multimorbidity and complex chronic conditions. Their expertise was included to inform and support the further development of the APN role in the care of this patient population.

Comment 7: Snowball sampling and purposive recruitment are mixed without explaining why each strategy was chosen.

Response 7:

We thank the reviewer for this insightful and highly valuable comment, which helped us to further clarify and strengthen the methodological description of our sampling strategy. The following sentence has been added:

The recruitment of APNs was guided by both purposive and snowball sampling, as these complementary strategies were considered to be appropriate for meeting the study aims and addressing the challenges of accessing the target population. Purposive sampling was applied first to ensure the inclusion of APNs with specific experience in APN-led models of care, thereby securing a high level of relevance to the research question. Snowball sampling was subsequently used to extend recruitment through professional and personal networks, enabling access to additional eligible participants who might otherwise have been difficult to identify [53].

Comment 8: Nineteen interviews are included, but no rationale for why this number was sufficient beyond vague "code saturation."

Response 8:

Thank you very much for this comment, as we mentioned before, we have revised the manuscript accordingly by adding the following sentence to the Data Collection section:

Data collection was conducted until code saturation was reached, defined as the point at which no new codes were identified. In addition, meaning saturation was assessed, indicating that no new nuances of meaning emerged within the existing themes. After the sixteenth interview, no new codes were generated; however, three additional interviews were

conducted to further confirm the robustness of the findings. Data collection was complete after a total of 19 interviews.

Comment 9: Reflexive thematic analysis generally discourages rigid saturation claims because meaning generation is theoretically infinite (Braun & Clarke, 2021).

Response 9:

We thank you for this comment and agree that reflexive thematic analysis critically questions rigid assumptions of saturation, as meaning making is considered theoretically open-ended and not finite (Braun & Clarke, 2021). Data collection was conducted until code saturation was reached, defined as the point at which no new codes were identified. In addition, meaning saturation was assessed, indicating that no new nuances of meaning emerged within existing themes. After the 16th interview, no new codes were identified, and the existing themes appeared stable. To further ensure robustness, three additional interviews were conducted, resulting in a total of 19 interviews.

Comment 10: Authors claim inductive analysis, yet interview questions were explicitly based on Hamric & Hanson's framework. This indicates deductive influence.

Response 10:

We would like to clarify that there appears to be a misunderstanding. As stated in the manuscript "The questions and topics for the interviews were discussed by the research team and formulated to cover the role and competencies of an APN within an APN- led clinic, as described in the APN model by Hamric and Hanson (2022) [67]". We respectfully disagree that the use of the Hamric and Hanson framework necessarily indicates a deductive analytical approach. The framework was used solely to support the development of broad interview topics and to ensure coverage of relevant aspects of the APN role and competencies. It was not used to predefine categories or guide the coding process. The analysis itself was conducted inductively, with codes and themes developed from the data rather than derived from the framework.

Comment 11: The first author was an APN with extensive expertise, but no detailed reflexive account explains how prior assumptions may have influenced interpretation.

Response 11:

We thank the reviewer for this important comment. This was addressed by adding an explicit

statement in the Methods section regarding the first author's professional background as well as her reflexive awareness throughout the research process:

The first author brought extensive professional expertise to the research context and was aware of the potential influence of prior assumptions throughout the research process, while actively striving to minimize this influence as much as possible.

Comment 12: The actual interview guide is absent, limiting reproducibility and methodological transparency.

Response 12:

We thank the reviewer for this important comment. The interview guide is presented below and has been included as supplementary material:

1. In what APN role are you involved in the care of multimorbid and complex chronically ill adults of younger and middle age?
2. For which patient population do you work in your role?
3. What is your Scope of Practice during the hospitalization, the transition from hospital to home and after hospitalization at home for these patients?
4. What is your scope of practice as an APN for this patient population during the hospital stay, during the transition from hospital to home, and at home?
5. How did the development and implementation of your APN role take place?
6. Which problems have you been confronted with in your role as an APN?
7. What facilitating and hindering factors have you experienced in implementing these APN roles?
8. Who is part of the interprofessional team, and what are your experiences with it?
9. What are the needs and requirements of young and middle-aged adults with multimorbidity and complex chronic conditions in the hospital and at home?
10. What additional activities could further improve patient care?
11. You are familiar with the Hamric model of APN practice and its core competencies - direct clinical practice, guidance and coaching, collaboration, leadership, evidence-based practice, and ethical practice. In your opinion, which of the above-mentioned competencies are required for APNs in an APN-led clinic to care for and treat multimorbid and/or complex chronically ill young and middle-aged adults?
12. Do the above-mentioned competencies sufficiently describe your role?
13. Do APNs need to meet additional requirements that are not described in Hamric's APN model?

14. What additional activities could further improve patient care?

In addition, these two interview questions were asked to participants from the United States and Canada.

15. What is the legal framework of APN practice in the United States/Canada?
16. What is the current status of APN role development in the United States/Canada?

Comment 13: USA/Canada interviews occurred in 2023, Swiss interviews in 2024. Healthcare policy changes over time could influence responses.

Response 13:

We thank the reviewer for this valuable comment. We appreciate the concern regarding potential temporal differences between data collection periods (USA/Canada in 2023 and Switzerland in 2024) and their possible influence on participants' responses. We would like to clarify that no substantive changes in healthcare policy or APN role regulations occurred during this time period that would have affected APN roles or the scope of practice relevant to this study.

Comment 14: The manuscript confuses credibility with reliability. "Reliability" is generally avoided in qualitative paradigms.

Response 14:

We thank the reviewer for this valuable suggestion. In the manuscript, we have replaced the term "reliability" with "credibility" to better align with qualitative research terminology.

Comment 15: The manuscript states the study falls outside the Human Research Act, yet informed consent and interviews involving professionals were conducted. More ethical clarification is needed regarding institutional permissions and international participants.

Response 15:

We thank the reviewer for this helpful comment. The Ethics Committee of Northwest and

Central Switzerland (EKNZ) was consulted regarding the need for ethical approval for this research project, both for interviews conducted with Advanced Practice Nurses (APNs) in the United States and Canada and for interviews with APNs in Switzerland. Two applications were submitted. Subsequently, the EKNZ issued Clarifications of Responsibility (Req-2023-01247 and Req-2024-00093), confirming that the project does not fall within the scope of the Human Research Act (HRA), as it does not involve research on human diseases or on the structure and function of the human body (HRA Art. 2 para. 1). In addition, the procedure for obtaining a Clarification of Responsibility was discussed with the Ethics Committee, which referred to the use of informed consent; this procedure was also applied in the present study. As previously mentioned, a scoping review was conducted, and APNs in the United States and Canada were contacted directly and invited to participate in interviews. In Switzerland, a call for participation was distributed through SwissAPN.

Comment 16: Themes are presented as categories without interpretation of relationships between them.

Comment 17: Large quotations dominate the section, while author interpretation is limited.

Response 16 and 17:

We thank the reviewer for these helpful and constructive comments. The points raised have been carefully addressed in the revised manuscript. In particular, the presentation of the themes and their interrelationships has been further developed to more clearly and analytically reflect the connections between them. In addition, the use of quotations has been reviewed and reduced, resulting in a more balanced integration of original quotations and author interpretation.

The revised results are now presented as follows:

Seven APNs from the USA and Canada and twelve APNs from Switzerland participated in this study. The participants from Switzerland were between 34 and 56 years old. Half of the participants had more than 10 years of professional experience in the care of adults with multimorbid and complex chronic illnesses, and the other half had between 5 and 10 years of experience. The specific professional titles of the participants from Switzerland were as follows: APNs (seven), NPs (three), CNS (one), and mixed NP/CNS (one). The participants from the USA were between 38 and 74 years old. Three of the participants had more than 35 years of professional experience, and four participants had between 15 and 20 years of experience in the care of the chosen patient group. The professional titles of the APNs from the USA and Canada were as follows: APNs (three) and NPs (four). Further sociodemographic data of the participants are presented in Tables 1 and 2.

The analysis identified a total of 10 themes describing the necessary (1) competencies, (2)

components, and (3) framework conditions for the care of multimorbid and complex chronically ill younger and middle-aged adults within an APN-led clinic in a hospital setting in the Swiss context: (1) direct clinical practice, (2) guidance and coaching, (3) collaboration, (4) psychosocial support, (5) person-centered care, (6) transitional care, (7) continuity of care, (8) regulations of the legal and regulatory framework and reimbursement of services, (9) resources, and (10) extended competencies and SOP. A representation of these themes can be found in Figure 1.

3.1 Competencies

From the participants' perspective, the development of an APN role concept for the care of younger and middle-aged adults with multimorbidity and complex chronic diseases within an APN-led clinic in a hospital setting requires the following competencies: (A) direct clinical practice, (B) guidance and coaching, (C) collaboration, and (D) psychosocial support.

3.1.1. Direct clinical practice

Direct clinical practice has been emphasized as a necessary core competency of APNs in APN-led clinics for the care of multimorbid and complex chronically ill young and middle -aged adults. A comprehensive clinical assessment was described as a central component of direct clinical practice. This involves a multi-layered approach that includes initial screening and a comprehensive clinical assessments. In addition, a comprehensive needs assessment and a psychosocial assessment should be conducted to capture the complex needs of patients in a holistic manner, accounting for health literacy, readiness for change, and current mental state. Within this process, an evidence-based and person-centred nursing approach is applied to structure care delivery. Further key components include medication management, diagnostic reasoning, and the interpretation of diagnostic tests. Overall, this approach aims to achieve a holistic understanding of patients' complex care needs:

"We have a very comprehensive assessment that's different than what normally happens in the hospital. It's really to look at high risk situations to pull out those high risks' potentials. So it could be that there's underlying anxiety or and depression, or that the there's not a good support system at home for the patient. We have a whole list of assessments (…) I perform them and then maybe identify. (…) this patient has some underlying anxiety and since they have COPD (..). That is if they become anxious. Is it gonna trigger a COPD flare or if they have a COPD flares, are they going to get more anxious, which is going to make the COPD worse and they end up back in the hospital". (Interview 4, APN, USA, Pos. 16).

From this perspective, within direct clinical practice, getting to know the patient in depth is considered essential; this involves building an understanding of the extent and severity of their conditions as well as their individual risk profile. Particular emphasis is placed on identifying patients' strengths and resources, alongside their challenges in managing their complex health conditions. Furthermore, patients' capacity and willingness to adapt to therapeutic interventions is seen as an important aspect of this clinical work:

"Direct clinical practice is critically important because in your direct clinical practice role you will learn about the person. You will learn about the scope and the extent of their illness, what their what their risks are. You'll learn enough about them to know what their strengths are, what their challenges are, and how they're adapting to medical therapies (…) So, I think that is truly foundational (Interview

1, APN USA, Pos. 57).

A holistic, evidence-based approach and person-centred care were described as essential in aligning treatments with patients' individual goals, enhancing patient engagement and build a strong therapeutic relationship:

"One of the most important tasks is patient engagement. This involves gaining their trust and convincing them that they need to change certain behaviors and make a real effort. Some people simply don't want to quit smoking, change their diet, or do things we know they should. This kind of engagement is therefore crucial. The APN builds a trusting relationship and tries to motivate the patient" (Interview, APN 1, USA, Pos. 25).

The advanced skills of APNs are expected to have a positive impact on treatment outcomes and to support and monitor patients' self-management abilities, thereby assisting patients in achieving their goals.

3.1.2. Guidance and Coaching

Guidance and coaching were identified as core competencies of APNs in the care of younger and middle-aged adults with multimorbidity and complex chronic illnesses. These competencies include counseling sessions that provide patients with information, knowledge, and guidance on a range of relevant topics, including partnership, sexuality, fertility, the desire to have children, and how to discuss the severity of the illness with one's partner and children. The key areas addressed in these sessions include the course of the illness, its progression, and expected outcomes, as well as treatment options and their potential side effects. In addition, counseling covers broader aspects of daily life, including the challenges patients may face in managing their condition, e.g., returning to everyday routines and work and establishing a sense of normalcy in daily life:

"What undesirable side effects can be expected and how can I prepare them for this, what is possible in terms of their ability to work, and it always depends on whether they are able to do so, or if they are in school or university, what is reasonable and what is possible during the time they are on sick leave, if it is not conceivable or reasonable for them. (...) There are so many possible topics, let's say, questions or concerns, needs that the person affected comes up with" (Interview 11, APN, Switzerland, pos. 15-16).

Counseling sessions support patients in promoting their individual autonomy and achieving their personal goals. In addition, counseling sessions empower patients to manage disease-specific symptoms themselves and respond to symptoms and health risks, improving patients' skills, competencies, and knowledge so that they can integrate their complex chronic conditions, recovery, and the achievement of personal goals into their lifestyle. These sessions also involve motivating and actively engaging patients to manage their complex care needs, as well as providing education, instruction, and coaching to manage complex care needs in relation to health promotion and disease exacerbation. In addition, these sessions aim to support treatment adherence:

"In these counselling sessions, the focus is on symptom management, self-management, medication management, but also on everyday life (...) it's about understanding the disease as a whole. Then we have counselling hepatocellular carcinoma counselling and transjugular intrahepatic portosystemic shunt counseling, which are very topic-centred discussions and, of course, cover other issues as well. So, all these social issues, financial issues, everything that actually comes up" (Interview 8, APN,

Switzerland, pos. 11).

These coaching and counseling sessions should also serve a psychoeducational purpose, helping patients to understand their current condition and to cope better with their illnesses. Furthermore, these counseling and coaching sessions are designed to actively involve patients in their treatment, serving as motivation for life changes and supporting patients in their willingness to implement these changes:

"One of the most important tasks is the active involvement of the patient. It's about gaining their trust and convincing them that they need to change certain behaviors and truly empower themselves. Some people simply don't want to quit smoking or change their diet, or they don't want to do things that we know they should be doing. Therefore, this form of involvement is important, and the nurse builds this trusting relationship and tries to motivate the patients. (…) You have to find out what will motivate this patient to approach things differently (…) what is important to him. I think in healthcare we rely too much on patients doing something simply because we as healthcare providers consider it important – and that is not the truth. You have to ask yourself: Why is this important to the patient?" (Interview 1, USA, Pos. 25-49)

3.1.3. Collaboration

Collaboration was identified as an essential core competency for Advanced Practice Nurses (APNs) in the care of this patient population. APNs are required to collaborate at multiple levels within reciprocal professional relationships and—with a view to the entire treatment process—to coordinate the exchange and communication between various healthcare professionals and departments. This includes collaboration between APNs, their patients, and their families to develop a treatment plan, improve self-management of complex needs and behaviors, optimize symptom management for chronic conditions, and optimize medication use and lifestyle changes. It also includes collaboration with interprofessional teams of physicians, nurses, physical therapists, and nutritionists within the hospital who are involved in the patient's care, with the aim of implementing an evidence-based treatment plan and coordinating discharge. Finally, it includes collaboration and continuous communication with the external healthcare professionals involved in a patient's care, such as general practitioners, clinicians, specialists, physical and occupational therapists, nutritionists, and psychologists. In addition to communication skills, collaboration requires strong interpersonal competencies such as empathy, flexibility, responsibility, trust, problem-solving skills, the ability to motivate, coordination skills, and leadership skills. APNs must be able to understand the perspectives of all parties involved and adapt the care process accordingly. In doing so, they integrate and utilize the specific expertise of different healthcare professionals to ensure and coordinate the best possible patient care:

"I have a patient; he's 58 years old and has multiple sclerosis. In addition, he suffers from chronic nausea and vomiting, neurogenic bladder, kidney stones, and recurrent urinary tract infections. And then there's the gout. He was in the Marine Corps (…). He used to be a very fit, athletic person, but now he's in a wheelchair (…) So, he's being treated by six specialists plus a general practitioner, and they're all working in different directions. A rheumatologist is also involved because of his gout. As you know, medications for gout can cause nausea. Medications for MS can cause urinary tract infections. That's why we have to find a common approach, for example, to reduce the dose of some medications and thus

alleviate the side effects (…) So, it's the typical situation of a middle-aged man with multiple illnesses. His case is very complex. As I said, I pointed out today that everyone has to pull together instead of each focusing on just one different organ system" (Interview 2, Pos. 59-60).

3.1.4. Psychosocial support

Providing psychosocial support in the care of younger and middle-aged adults with multiple illnesses and complex chronic diseases was highlighted as an additional essential core competency of APNs. During the acute and post-acute treatment phases, these patients experience a high level of psychosocial distress, accompanied by emotional and psychological distress, depression, and anxiety disorders. In particular, following diagnosis, they require psychosocial support to stabilize their mental state and to cope with the course of the illness and its consequences—both in the hospital during the acute phase and at home after discharge:

"Absolutely, I mean, that's part of our job, because the emotional strain is high. People who are diagnosed with cirrhosis have a life expectancy of 12 years. When they experience their first decompensation, i.e. when they are hospitalized due to comorbidities, be it ascites, hepatic encephalopathy or hemorrhaging, they have a life expectancy of 2 years. So, they have a chronic progressive disease that usually leads to premature death" (Interview 8 APN Switzerland, pos. 61).

Patients experience a high level of psychosocial and psychological distress due to existential anxieties and fears about the future, such as professional and financial worries, as well as other problems, such as the fear of job loss, unemployment, and disability. In addition, concerns related to family members, including spouses or minor children, contribute to this burden and are often linked to perceived loss of relationships and role changes within the family system, social exclusion, isolation, and loneliness. These concerns necessitate psychosocial support for this patient group and may require referral to psychological or psychiatric services. In this context, APNs must be able to recognize psychosocial stress, emotional distress, and potential anxiety disorders as part of comprehensive patient care; they must also assess whether the distress can be managed independently or whether referral to psychological or psychiatric services is required:

"As soon as the diagnosis is made, I am present at the diagnostic consultation (...) and always assess the psychosocial needs. Last year, I also completed the Certificate in Advanced Studies (CAS) in psycho-oncology (...) if the level of psychological distress is manageable, I can also help with psycho-oncological counselling or refer them to psycho-oncologists" (Interview 5, APN, Switzerland, pos. 25).

3.2. Components

Several interconnected components were found that, from the perspective of the participating APNs, are necessary for developing an APN role concept for the care of younger and middle-aged adults with multimorbidity and complex chronic conditions in an APN-led clinic within a hospital setting. These components were perceived as closely interconnected; prior to discharge, an understanding of each individual, patient-specific situation is considered to be a key prerequisite for ensuring effective transitional care; in turn, this is seen as essential for maintaining continuity of care throughout the entire treatment process. These components

include the following: (E) person-centred care; (F) transitional care; (G) continuity of care.

3.2.1. Person-centred care

Person-centred care was highlighted by participants as a central key component for optimizing the care of younger and middle-aged adults with multimorbidity and complex chronic illnesses. This encompasses a holistic view of patients, their illnesses and medical needs, and their personal needs and problems and challenges they face. Especially prior to discharge, it is essential to identify what a patient needs to live independently at home and ensure that these needs are being met in their individual situation. The central focus is on the patient's goals and supporting them in achieving these goals:

"It's very much focused on the patients' goals, to help them achieve their goals, to learn how to live with and manage and be healthier with their, whatever their health problems are (...) the APN will look at everything related to that goal. (…) So, using that as a motivator, we get all kinds of things in place, we get community resources in place, we get the family engaged. (…) Is the big picture of what's it going to take to help this person be successful. And many times, it's to help the patient be able to take care of themselves where before they were not able to do that, but we helped them and through education and through also working with the providers about better managing the patients. Sometimes they need to have you on different drugs or whatever" (Interview 1, APN, USA, Pos.21-23).

From the perspective of APNs, in addition to building a trusting relationship with patients, their active participation is considered another essential aspect of person-centred care—this comprises shared decision making, patient involvement, and the opportunity to participate in treatments:

"I think that participation is an important need. They want to be involved in their treatment, i.e. autonomy and participation. It's not like it used to be (…) when therapy was initiated and patients couldn't contribute much. Now patients are informed, they know what's going on, they want to be informed, they want to be involved to treat (…) to involve the patients, and that's a joint treatment, it's the joint initiation of therapies with participatory decisions by the patients, and it's not just that the person with the white coat decides what happens, autonomy is really something that must not be forgotten and is really very important" (Interview 10, APN, Switzerland, Pos. 64).

From the participants' point of view, an essential aspect of person-centered care is the recognition of each patient's values and beliefs, as well as the acceptance of their decisions:

"At the next consultation, they came and said they would now like to draw up a living will with me (...) they were enormously relieved that they had now put it down on paper, and although I am a little surprised by the content, because he really wanted maximum therapy until the end of his life. He said he was a fighter, that he had already been through a lot, that he wanted everything to be done (…). We then recorded the patient's clear wishes and intentions" (Interview 3, APN, pos. 51).

3.2.2. Transitional Care

Transitional care was highlighted as an additional key component in the care of multimorbid and complexly chronically ill younger adults during the transition from hospital to home. From the perspective of APNs, transitional care represents a central aspect of their role; here, they provide the support necessary to manage the highly complex care and treatment needs

of this patient population in outpatient settings. Transitional care involves comprehensive and holistic care delivered in collaboration with patients, their families, and interprofessional teams. Particular emphasis is placed on individualized, person-centered care and coordination of care, as well as support for self-management, symptom control, and medication adherence. In addition, transitional care includes assistance with psychosocial concerns and the organization of daily life:

"Transitional care means that if a person is going from one clinical care setting to home that they come into the hospital, they were completely healthy, they had a heart attack and now they're going home very, very ill. So, they're not just coping with the change insight, they're coping with a major difference in their level of function. So, it's not just setting specific it's also what, what, the needs are of the patient. And what we have found over years is if you don't manage those transitions, people get into a lot of trouble and they, even though sometimes in the hospital, we think that we're preparing patients well to go home many times we don't really know what their issues are because we haven't been in the home. We don't know what happened. We don't know what the support systems are" (Interview 1, APN, USA, Pos. 21).

Another important aspect from the perspectives of APNs in the context of transitional care—coordinating the transition from hospital to home—is ongoing support, including prioritizing appointments to reduce patients' feelings of being overwhelmed, especially after discharge following an acute episode:

"Coordinating appointments with the general practitioner or cardiologist, as I often find that patients are simply overwhelmed when they are at home, they can't keep up with everything they still have to do and often don't even know what that is anymore (…)." (Interview 6, APN, Switzerland, Pos. 21-23)

3.2.3. Continuity of care

Continuity of care emerged as another key component in the care of these patients. From the perspective of APNs, continuity of care ensures seamless care from hospital admission to discharge and beyond, delivered through the coordinated involvement of the same APN in collaboration with patients, their families, and internal and external healthcare providers. Continuity of care primarily serves to prevent interruptions in care across different healthcare settings during the transition from hospital to home. This is facilitated by an APN, who coordinates and delivers the necessary interventions throughout the entire course of treatment. In this context, continuity of care for patients with complex conditions strengthens communication and collaboration between hospital-based teams and outpatient healthcare providers. APNs emphasize that it is necessary that they take on a central coordinating role throughout the entire treatment process, both within and between different care settings, in order to ensure continuity and coordination of care, particularly for patients with complex conditions. This role includes building a therapeutic relationship with patients, gaining their trust, and actively involving them in their care:

"During the hospital stay, I see the patients daily and work closely with the attending physician, the nursing staff, the social workers, the discharge planners, and all the outpatient services involved after the patient's discharge. I'm like the quarterback in the football – I coordinate the various players and ensure everyone stays informed about their respective tasks (…) That's my role in the hospital: I help

determine the appropriate time for the patient's discharge, identify the necessary discharge services, and support the social workers and discharge planners in this. I offer home visits and work as part of a team and so we can manage it together" (Interview 4, APN, USA, Pos. 16-17).

APNs describe themselves as the first point of contact not only for patients and their families but also for rehabilitation services and other healthcare professionals, including general practitioners, specialists, physiotherapists, and speech and language therapists. From the perspective of APNs, they are also responsible for referring patients to new healthcare services and monitoring their treatment progress to ensure that these complex cases receive the necessary high-quality care in a timely manner. APNs consider it important to revisit topics and information already discussed during hospitalization when conducting home visits in order to clarify outstanding questions and support patients in accessing and utilizing external support services. Given the complexity of care and the high level of psychosocial distress in this patient population, continuity of care and APN support represent a key responsibility in the management of complex, chronic, and progressive conditions in this patient group. In this context, APNs, in collaboration with primary care physicians, support young and middle-aged adults with multimorbid and complex chronic conditions in transitioning from intensive transitional care programs to independent management.

3.3. Framework Conditions

Several interdependent framework conditions were identified in the perspectives of Advanced Practice Nurses (APNs) as necessary prerequisites for the development of an APN role concept for the care of younger and middle-aged adults with multimorbidity and complex chronic diseases in an APN-led clinic within a clinical setting. These are the following: (H) regulation of the legal and regulatory framework and reimbursement of services; (I) resources; (J) extended competencies and scope of practice.

3.3.1. Regulation of the legal and regulatory framework and reimbursement of services

APNs emphasized the existence of an appropriate legal and regulatory framework as a key factor influencing the feasibility of practicing as an APN in an APN-led clinic for multimorbid and complexly chronically ill adults of younger and middle age. Participants described the current legal and regulatory framework for APNs in Switzerland as insufficiently developed, resulting in uncertainties regarding formal recognition of the APN role, its scope of practice, and its professional responsibilities. They highlighted the need for a clear legal definition of the APN role, including the regulation of scope of practice and requirements for professional practice. Furthermore, participants referred to the importance of standardized regulations governing licensure, credential recognition, and professional oversight. The legal recognition and regulation of APN master's degree programs were also considered essential for ensuring consistent educational standards and strengthening the professional foundation of the APN role:

"It would be great if the Master's degree were also legally regulated and equipped with expanded competencies (...). It's simply unacceptable that we still haven't clearly defined and formulated these roles. And that there's still a lack of clarity between the individual APN roles—I'm talking about CNS and NP—we still have many hybrid forms here in Switzerland because we don't have the training for

CNS and NP at the level one would expect. It's actually a tragedy when you consider that we've been able to study in this field for 24 years now, but nothing has changed at the national level" (Interview 8, APN, Switzerland, Pos. 69).

The participants emphasized that, in addition to a clear legal and regulatory framework, the reimbursement of services provided by APNs should also be regulated by law. The ability to independently bill for services was identified as an important prerequisite for working in APN-led clinics.

"It would also be a great simplification if tariff structures were such that APNs could also clearly bill 1:1 for the services they could provide and do provide. A lot of things are now in a grey area where the doctor is billed, under his name, even though the service is provided by me" (Interview 11, APN, Switzerland, Pos. 71).

3.3.2. Resources

The availability of resources to fulfil the APN role in the care of younger and middle-aged adults with multimorbidity and complex chronic illnesses was emphasized as another important aspect. Participants noted that vacant positions and unfilled posts represent a significant challenge. Ensuring the sustainability of the APN role was highlighted as a key concern, alongside the integration of APNs as an integral part of the multidisciplinary care team, beyond the acute setting and across the outpatient sector:

"A major issue with APNs is that they are ´single-man, single woman roles´ and that APN teams are rarely available, where patients have the option of having a contact person available in times of absence. This is not the case in my role either (…) Ensuring the sustainability of the role is another issue (…) if I were to reorient myself, would the sustainability of the role be ensured, that the role and the position would be filled again, even if one is aware of the added value (…) APN roles should be seen as an integral part of the treatment team, even beyond the acute setting and across the outpatient sector" (Interview 11, APN, Switzerland, Pos. 71).

Participants emphasized that funding for APN roles should be ensured at the national level in Switzerland. In addition, they highlighted the need to develop mechanisms to demonstrate the effectiveness of the APN role in the care of this patient population:

"I secured funding through an innovation grant application, and we received enough money to fund one role for a year (…) it's difficult to clearly demonstrate the effectiveness of such roles, and with the limited scope of practice we have in Switzerland due to the legal situation, it's even more difficult because we can't easily conduct these comparative studies with APN physicians (…) you can't score points with patient or team satisfaction" (Interview 8, APN, Switzerland, Pos. 39).

The participants from Switzerland perceived a lack of full-time positions as a key resource-related limitation in attempts to optimize and improve the care of young and middle-aged adult patients with complex needs and multimorbid, chronic illnesses. This shortage was seen as a limiting factor in the continuity of care that APNs are able to provide, given the restricted scope of their role. Furthermore, insufficient time resources for patient follow-up were identified as a factor constraining systematic assessments and management of patients' needs and requirements:

"I would need much more time for follow-up care (...), but I also see from what patients say that it's not just a case of everything being fine when the illness is under control (...) assessing needs in the follow-up phase (...) that would need to be expanded (Interview 5, APN, Switzerland, pos. 133).

3.3.3. Extended Competencies and Scope of Practice

Participants identified a need for extended competencies and a clearly defined SOP for APNs within APN-led clinics to better address the complexity of care for young and middle-aged adults with multimorbidity and complex chronic conditions. This included, on the one hand, the authority to manage medications, including prescribing and adjusting treatment regimens; on the other hand, participants reflected that the authority to refer patients to external healthcare professionals would be beneficial in their ability to support the continuation of complex outpatient therapies for this patient population. The participants from the USA and Canada stated that APNs have the necessary skills to independently involve the necessary supporting health professionals such as physiotherapists, nutrition therapists, and psychologists; they also asserted their knowledge of the services that could ensure and facilitate the necessary continuity of care for these multimorbid and complex chronically ill younger and middle-aged adults, both within the hospital and after their hospital stay. To acquire these necessary advanced skills, and to gain an understanding of the role of APNs within APN-led clinics in relation to transitional care, a comprehensive training program with online modules was developed to acquire the necessary knowledge:

"We therefore have an entire educational program we've developed we have online modules course modules. We have a whole course that we do on transitional care, that the nurses can do online to really learn all of this because they tend to have been educated in the model of the role that you're in, where you have your patient in clinic and you follow that patient, but you don't have that broad experience across the full spectrum of healthcare. So, we need to help them understand" (Interview 1, APN, USA, Pos. 26).

The independent adjustment of medication—particularly for patients with heart failure and especially in the early post-discharge phase—was identified as an area requiring extended competencies for APNs. Participants indicated that this field of activity should be reviewed and adapted at the legislative level to enable earlier and more effective treatment adjustments. This was seen as a means of improving patient outcomes by facilitating the timely optimization of therapy:

"The adjustment of medication in the early phase of discharge home is an essential aspect of 'offering an additional service so that patients can be more stable (...) this includes, for example, titrating medication, or if we let them (the patients) run on half the dosage, then we are simply giving them the opportunity to have a better outcome" (Interview 3, APN, Switzerland, pos. 35).

Given the absence of a fully established legal and regulatory framework for APNs in Switzerland, participants highlighted the need for clear legal regulations as well as structured educational programs to support the expansion of competencies and SOP. They indicated that, in the context of a limited SOP, a so-called "collaboration practice physician" would be required; this would be similar to models implemented in certain states in the USA such as Pennsylvania, where collaborative practice agreements are used.

Comment 18: Given multinational sampling, comparative insights between Switzerland and North America are absent.

Response 18:

Thank you very much for this valuable comment. We would like to clarify a potential misunderstanding regarding the interpretation of the results. The study was not designed as a comparative analysis between Switzerland and North America, and the findings were not analyzed or presented in terms of systematic cross-country comparisons. Rather, the inclusion of APN experiences from the United States and Canada was intended to broaden and enrich the understanding of APN-led transitional care models for younger and middle-aged adults with multimorbidity, drawing on established practice experiences in these contexts. We have clarified this point in the manuscript to avoid any potential misinterpretation of the study's aim and the presentation of the results.

Comment 19: "Continuity of care" and "transitional care" substantially overlap conceptually, reducing thematic clarity.

Response 19:

We acknowledge the reviewer's observation that "continuity of care" and "transitional care" substantially overlap conceptually, which could reduce thematic clarity. Both terms are, however, necessary for our analysis. As outlined in Naylor's Transitional Care Model, the terms are defined differently: continuity of care refers to long-term, consistent care provided by the same team, whereas transitional care encompasses time-limited, targeted interventions during transitions between different levels of care. By clearly distinguishing these definitions, we aimed to maintain thematic clarity in the analysis.

Comment 20: Much of the discussion reiterates findings instead of critically interpreting them.

Comment 21: No conflicting evidence or limitations of APN-led care models are discussed.

Response 20 and 21:

We sincerely thank the reviewer for this valuable and constructive feedback on points 1 and

2. In response, the Discussion section has been thoroughly revised. Redundancies with the Results section have been removed, and the critical reflection has been substantially strengthened, including a more in-depth consideration of the implications for health policy and nursing education, as suggested. Conflicting evidence and limitations of APN-led care models are also discussed. The Discussion now reads as follows:

The results of this study highlight the competencies, components, and framework conditions that are necessary prerequisites in the development of an APN role in an APN- led clinic in Switzerland for multimorbid and complex chronically ill young and middle-aged adults within clinical setting in the Swiss context. The required competencies identified for this group are direct clinical practice, guidance and coaching, collaboration, and psychosocial support; the required components identified for this group are person-centered care, continuity of care, and transitional care; the essential framework conditions identified for this group are the regulation and regulatory of the legal framework and the eligibility for reimbursement of services, resources, and extended competencies and scope of practice.

The description of direct clinical practice as a core APN competency aligns with the framework presented by Hamric and Hanson (2022), who define it as a central element of APN practice. The authors emphasize a holistic approach that accounts for both physical and emotional patient needs to support stabilization and the improvement of health outcomes [57]. Similarly, guidance and coaching are key responsibilities in current APN roles, consistent with frameworks such as the International Council of Nurses (2020) [44] and that presented by Hamric and Hanson (2022) [58]. As relationship-oriented approaches, guidance and coaching provide information and support to younger adults with multimorbidity and complex chronic illnesses, promoting self-determination, autonomy, goal setting and achievement, and coping with changes in their lives [57]. Guidance and coaching are considered key responsibilities, involving education and support to help patients in managing complex health needs, promoting adherence, and developing the skills needed for self-management of symptoms and chronic conditions. Equally, collaboration has been identified as another key APN competency, occurring across multiple levels through reciprocal relationships. The identification of this competency aligns with the findings of Hamric and Hanson (2022), who describe collaboration as a core APN competency, involving reciprocal relationships with patients, their families, and healthcare providers across the treatment process [57]. According to Hamric and Hanson, this collaboration includes coordinating communication across the treatment process, considering patient preferences, and using interprofessional resources to ensure high-quality care. The ability and competence to provide psychosocial support for this patient group has been confirmed as another essential ANP competency, both in the hospital during acute episodes and at home after discharge.

This significant psychosocial burden experienced by multimorbid and complexly chronically ill younger and middle-aged adults is characterized by higher levels of psychological distress [17], mental disorders [14, 22, 23], impaired work performance and productivity [6], early retirement [59], reduced social contacts to cope with treatment burden and meeting family needs [60,61], and negative effects on family relationships [59, 62, 63]. In Hamric and Hanson's (2022) competency model, psychosocial support is embedded within several competency

areas, such as direct clinical practice and guidance and coaching, but is not identified as a standalone competency [57]. Given the high psychosocial burden in this patient group, psychosocial support should be recognized as a distinct APN competency. This would better reflect the growing importance of psychosocial aspects in the care they provide.

Another key finding of this study is that the care of young and middle-aged adults with multimorbidity and complex chronic illnesses provided by APNs should be person-centered. This involves a holistic view of patients, their illnesses and medical needs, as well as their individual challenges and concerns. Recognizing and addressing each patient's specific needs is essential in supporting their ability to live independently at home. In addition to building a trusting relationship with the patient, this includes promoting their participation through shared decision making, patient involvement, and active engagement in their treatment. The focus of person-centered care is not only on physical and cognitive outcomes but also aims to enhance the wellbeing of those affected, recognizing their authenticity and seeing the person behind the illness [64]. Person-centered care also considers the perspectives of Swiss APNs themselves, actively shaping their work environment and thus further developing nursing practices [64]; this involves implementing improvements which they identify as being necessary for the care of this patient population (these are improvements that APNs in the US and Canada have identified as being important). This person-centered view of multimorbidity differs from the disease-centered comorbidity perspective of previous care models [65] and highlights the paradigm shift from a disease-specific biomedical approach to a holistic, biopsychosocial understanding of health and care for multimorbid and complexly chronically ill younger and middle-aged individuals [66]. This approach ensures that patients with multiple chronic illnesses and functional limitations have unique, individual experiences that go far beyond the sum of their separate diagnoses. The associated complexity of health and treatment burdens requires a comprehensive, holistic, person-centered approach that systematically considers and integrates the individual needs, personal experiences, and values of this patient group, going beyond disease-specific care strategies [67]. However, it is crucial to clearly define the future focus and goal of APN roles in the care of multimorbid and complexly chronically ill young and middle-aged adults in Switzerland. This is important : if the focus of APN roles is on supporting and replacing physicians, rather than on person-centered, health-oriented, and holistic nursing practice, the nursing components of the APN role will be undervalued and neglected [68]. This tendency is reinforced in disease-oriented and medically driven healthcare systems, which often fail to adequately recognize the value-adding components of the APN role. Furthermore, there is currently a lack of reimbursement mechanisms that appropriately recognize and reward these broader dimensions of care [69].

This study also indicates that the experiences of APNs from the USA and Canada in the care of this population group in clinical settings are strongly linked to the concept of transitional care; these individuals consider transitional care to be a central focus of their work. Transitional care includes elements of comprehensive, holistic care in collaboration with patients and an interprofessional team. Transitional care plays an exceptionally important role, particularly for adults with complex chronic illnesses during the transition from hospital to home; this has been shown by studies demonstrating its effectiveness in ensuring continuity of care, preventing clinical deterioration, and supporting safe transitions between hospital and home [70-72]. Transitional care models are internationally recognized as the most innovative

care models for ensuring the continuity of care from hospital admission to discharge. They also demonstrably contribute to improved patient safety and reduced costs [73-74]. However, in this study, the experiences of Swiss APNs demonstrate that this transitional care component, which is needed by this patient population, is still underdeveloped, and it is less mature than in the USA and Canada. The acquisition of knowledge and skills for managing transitions of care, particularly among adults with complex care needs, should therefore be an integral component of APN education. Educational programs could follow the example of the United States, where a competency-based approach has been developed to prepare future APNs for the care of older adults. This approach is grounded in the evidence-based interventions of the transitional care model and aims to strengthen competencies for delivering high-quality, coordinated transitional care [75].

Another finding of this study is the identification of several interdependent framework conditions as necessary prerequisites for developing an APN role concept for the care of younger and middle-aged adults with multimorbidity and complex chronic diseases in an APN-led clinic within a hospital setting. These necessary prerequisites include the availability of essential resources such as time and personnel, the regulation of legal and regulatory frameworks, and the reimbursement of services provided by APNs in Switzerland. The resource debate represents a crucial issue for Swiss APNs in ensuring the continuity of care for these patients with complex needs and the assessment and fulfillment of their needs. Within Switzerland, CNS roles still predominate. Due to the Swiss financing system, these CNS roles can be integrated into clinical settings using diagnosis-related groups (DRGs). The deployment of Swiss APNs as NPs, primarily in the outpatient setting, is different. They are not yet authorized as independent service providers under the Swiss Health Insurance Act. An important step would be the formal recognition of APNs within the Swiss Health Professions Act in order to advance this issue at the national level [76]. Initial developments in Switzerland indicate that the APN role is being regulated at the cantonal level, particularly in the cantons of Vaud, Neuchâtel, and Valais [76]. Initial positive experiences in these new APN roles have been documented [77-85]. Likewise, the development of a legal framework for Swiss APNs should be accompanied by an expansion of their competencies, enabling them to independently refer patients to internal and external healthcare professionals such as physiotherapists, nutritionists, and psychologists. This may also include expanding their competencies to prescribing and adjusting medications. However, the further development of APNs in Switzerland must be understood within a highly regulated healthcare system in which workforce planning, financing mechanisms, and professional scopes of practice are closely interlinked. Unlike in less-regulated systems, the integration of APNs requires coordinated developments across multiple policy domains, including education, professional regulation under the Health Professions Act, and reimbursement structures within the mandatory health insurance system. From a workforce perspective, the introduction of APNs raises critical questions regarding role delineation between physicians and advanced nursing roles, as well as the redistribution of clinical responsibilities in response to increasing care complexity and workforce shortages. In terms of financing, a key barrier remains: the current absence of clearly defined APN reimbursement pathways. This necessitates the development of tariff structures and potential new categories of ambulatory service provision. These regulatory and financial conditions directly influence educational requirements, reinforcing

the need for competency-based master's-level preparation that integrates advanced clinical training, supervised practice, and alignment with internationally established APN standards. Consequently, the further development of APNs in Switzerland is not a singular regulatory step; rather, it is a multi-layered policy process requiring alignments between education, workforce regulation, service authorization, and healthcare financing. It is therefore essential that these aspects are appropriately regulated and coherently addressed to ensure the sustainable integration of APNs into the Swiss healthcare system [76] (p. 26-38). The article by Hako, Turunen, and Jokiniemi (2023) demonstrates that clearly defining competencies for Advanced Practice Nurses (APNs) is crucial for the successful development and implementation of this professional role in healthcare. Since competence is a fundamental prerequisite for APN practice, identifying and defining their competency dimensions forms the basis for developing role profiles, training programs, and competency assessment procedures. Furthermore, systematically documenting APN competencies helps strengthen role understanding, increase the visibility of the professional role, and support its implementation in healthcare. This, in turn, can improve the quality of care, access to healthcare, and the cost-effectiveness of healthcare professional deployment [86].

Overall, APN-led care models demonstrate positive effects on clinical and patient outcomes in the care of multimorbid and complex chronically ill adults of young and middle age, meanwhile, high-intensity integrated care approaches do not consistently lead to cost reductions [46]. The current evidence suggests that integrated healthcare is primarily focused on geriatric populations [38, 87, 88], whereas younger and middle-aged adults remain underrepresented [46]. At the same time, there is considerable heterogeneity among APN-led care models, including transitional care models, care management models, care transition intervention programs, nurse case management, and chronic disease management models. This heterogeneity is also reflected in the competencies of APNs, which vary in both form and intensity. Furthermore, these models differ substantially in duration, as well as in the average number and intensity of patient contacts [46]. From a research perspective, this implies that a logical next step in the development of APN roles could involve the systematic design and further development of a new APN role concept using the PEPPA-Plus framework, which would subsequently be adapted, implemented, and evaluated within the respective institutional context. This process could be undertaken as part of a feasibility study [89]. In this context, it would also be essential to systematically capture additional perspectives on the APN role, particularly those of external healthcare providers, such as general practitioners and community-based home care services. The implementation of the APN role concept should be guided by a program theory, consisting of a change model and an action model [90]. This program theory later supports a theory-driven evaluation, as recommended by the latest guidelines of the Medical Research Council (MRC) Framework for Developing and Evaluating Complex Interventions [91], which emphasizes a responsibility "not only to assess whether an intervention works or does not work but also how and why it does work" [90] (p. 17). This evaluation could also serve as a basis for decision making regarding the implementation of an intervention in collaboration with policymakers [92].

Comment 22: The discussion continuously validates Hamric rather than generating new theoretical contributions.

Response 22:

Thank you very much for this insightful comment. We appreciate the opportunity to further clarify the theoretical positioning of our discussion. The Hamric model is widely recognized as a foundational APN framework and serves as a key reference point for APN role development and evaluation in the Swiss context. Accordingly, our discussion primarily draws on and aligns with this established framework. At the same time, our findings suggest a potential limitation of the model, as psychosocial support is not explicitly defined as a distinct competency within Hamric's framework. Based on this observation, we propose that psychosocial support may warrant further conceptual clarification as a distinct APN competency, which could be considered in future refinements of APN role frameworks.

Comment 23: The manuscript claims relevance to Swiss healthcare but inadequately discusses Swiss workforce, financing, or policy barriers in depth.

Response 23:

We sincerely thank the reviewer for this valuable comment. As already outlined in the Discussion, the aspects mentioned—Swiss healthcare workforce structures, financing mechanisms, and relevant policy barriers—have been addressed and integrated into the revised manuscript. This reads as follows in the discussion:

Another finding of this study is the identification of several interdependent framework conditions as necessary prerequisites for developing an APN role concept for the care of younger and middle-aged adults with multimorbidity and complex chronic diseases in an APN-led clinic within a hospital setting. These necessary prerequisites include the availability of essential resources such as time and personnel, the regulation of legal and regulatory frameworks, and the reimbursement of services provided by APNs in Switzerland. The resource debate represents a crucial issue for Swiss APNs in ensuring the continuity of care for these patients with complex needs and the assessment and fulfillment of their needs. Within Switzerland, CNS roles still predominate. Due to the Swiss financing system, these CNS roles can be integrated into clinical settings using diagnosis-related groups (DRGs). The deployment of Swiss APNs as NPs, primarily in the outpatient setting, is different. They are not yet authorized as independent service providers under the Swiss Health Insurance Act. An important step would be the formal recognition of APNs within the Swiss Health Professions Act in order to advance this issue at the national level [76]. Initial developments in Switzerland indicate that the APN role is being regulated at the cantonal level, particularly in the cantons of Vaud, Neuchâtel, and Valais [76]. Initial positive experiences in these new APN roles have been documented [77-85]. Likewise, the development of a legal framework

for Swiss APNs should be accompanied by an expansion of their competencies, enabling them to independently refer patients to internal and external healthcare professionals such as physiotherapists, nutritionists, and psychologists. This may also include expanding their competencies to prescribing and adjusting medications. However, the further development of APNs in Switzerland must be understood within a highly regulated healthcare system in which workforce planning, financing mechanisms, and professional scopes of practice are closely interlinked. Unlike in less-regulated systems, the integration of APNs requires coordinated developments across multiple policy domains, including education, professional regulation under the Health Professions Act, and reimbursement structures within the mandatory health insurance system. From a workforce perspective, the introduction of APNs raises critical questions regarding role delineation between physicians and advanced nursing roles, as well as the redistribution of clinical responsibilities in response to increasing care complexity and workforce shortages. In terms of financing, a key barrier remains: the current absence of clearly defined APN reimbursement pathways. This necessitates the development of tariff structures and potential new categories of ambulatory service provision. These regulatory and financial conditions directly influence educational requirements, reinforcing the need for competency-based master's-level preparation that integrates advanced clinical training, supervised practice, and alignment with internationally established APN standards. Consequently, the further development of APNs in Switzerland is not a singular regulatory step; rather, it is a multi-layered policy process requiring alignments between education, workforce regulation, service authorization, and healthcare financing. It is therefore essential that these aspects are appropriately regulated and coherently addressed to ensure the sustainable integration of APNs into the Swiss healthcare system [76] (p. 26-38). The article by Hako, Turunen, and Jokiniemi (2023) demonstrates that clearly defining competencies for Advanced Practice Nurses (APNs) is crucial for the successful development and implementation of this professional role in healthcare. Since competence is a fundamental prerequisite for APN practice, identifying and defining their competency dimensions forms the basis for developing role profiles, training programs, and competency assessment procedures. Furthermore, systematically documenting APN competencies helps strengthen role understanding, increase the visibility of the professional role, and support its implementation in healthcare. This, in turn, can improve the quality of care, access to healthcare, and the cost-effectiveness of healthcare professional deployment [86].

Comment 24: The study's small qualitative sample cannot justify broad policy-level conclusions regarding national APN regulation.

Response 24:

Thank you very much for this valuable and insightful comment. We sincerely appreciate your careful reading and critical reflection on this point. We would like to clarify that it was not our intention to suggest that the findings directly justify broad policy-level conclusions regarding national APN regulation. We fully agree that, given the small qualitative sample, such an interpretation would be inappropriate. In response, we have revised the manuscript accordingly. This point has been removed from the conclusion and, instead, appropriately integrated into the discussion, where it is now presented in a more cautious and contextually grounded manner.

Comment 25: No mention of methodological limitations, contextual constraints, or transferability concerns.

Response 25:

We thank the reviewer for this valuable suggestion. In response, we have expanded the manuscript and created a dedicated section addressing the limitations of the study. This now includes the following limitations:

A key limitation of this study lies in the fundamental differences between the healthcare systems included. The study utilizes perspectives from APNs in the United States and Canada, where APN roles within APN-led models of care for multimorbid and complex chronically ill adults in younger and middle adulthood are well established; these are combined with perspectives from Switzerland, where APNs are present but APN-led models of care for this patient group have not yet been implemented. This structural difference represents a fundamental contextual discrepancy between the settings and perspectives accounted for in this study. While the integration of these perspectives enables a broader understanding of the APN role in the care of multimorbid and complex chronically ill younger and middle-aged adults, this tension cannot be fully resolved and therefore remains a limitation of the study.

Comment 26: The statement that Swiss APNs "have the potential to fulfill this role" is insufficiently supported by limited qualitative perceptions alone.

Response 26:

We thank the reviewer for this valuable and critical comment. We fully agree that the original formulation may have overstated the strength of the qualitative evidence. In response, we

have revised the statement to better reflect the interpretative nature and scope of our findings, ensuring that conclusions remain closely grounded in the participants' accounts. The revised sentence now reads as follows:

the findings suggest that Swiss APNs may be well positioned to contribute to this role.

Comment 27: Conclusion is extremely lengthy. Max 70 words and No references should be used

Response 27:

Thank you very much for this helpful comment. We highly appreciate your recommendation regarding the length and structure of the Conclusion section. In response, the Conclusion has been substantially shortened and revised to improve its clarity and readability. Although it was not possible to reduce the section to exactly 70 words without compromising essential content and practical implications, we carefully condensed the text and removed all references as recommended. The revised Conclusion section now reads as follows:

This is the first study to identify the necessary competencies, components, and framework conditions for developing an APN role concept for the care of younger and middle-aged adults with multimorbid and complex chronic illnesses in Switzerland. The perspectives of APNs in Switzerland show that this patient group needs complex and long-term care that extends beyond the boundaries of the hospital. While the development of APN roles in Switzerland is still in its early stages, the findings suggest that Swiss APNs may be well positioned to contribute to this role.

In the context of these findings, this section presents key conclusions and recommendations for policy development, the further advancement of APN education, and future research within the Swiss context.

Education and continuing professional development remain central to fully unlocking the potential of APNs in Switzerland. In particular, the further development and harmonization of existing Master of Science (MSc) programs in nursing are crucial to ensuring consistent competency profiles across the country and to strengthening the APN role in a coherent manner. In addition, a clear embedding of the APN role within the Health Professions Act is necessary to clearly define educational requirements, competencies, responsibilities, and scope of practice. Only in this way can the coherent integration of APNs into the Swiss healthcare system be ensured.

The findings highlight the importance of expanding the competencies and scope of practice of APNs in Switzerland in the care of multimorbid and chronically ill young and middle-aged patients with complex healthcare needs. A clear nationwide legal framework is necessary to enable APNs to take on more autonomous roles in the management of complex

patient populations and thereby contribute to the sustainability of the healthcare system. Experiences from countries with established APN roles, such as the United States and Canada, further demonstrate the benefits of integrating APNs into APN-led care models within hospital settings, including improved patient outcomes and healthcare utilization outcomes such as reduced hospital readmission rates and shorter lengths of stay.

Future research should focus on the implementation and outcomes of APN-led models of care in hospital settings, including evaluations of patient outcomes, readmission rates, and quality of care, as well as the long-term sustainability of such models. In addition, further studies are needed to examine the development of APN roles over time in Switzerland and to identify factors that might facilitate or hinder their successful implementation. Moreover, future research should explore the perspectives and experiences of healthcare professionals and patients regarding APN-led care models in hospital settings. Funding for projects promoting the APN role is essential in supporting care for young and middle-aged adults with multimorbidity and complex chronic conditions.

28. Response to Comments on the Quality of English Language

Comments on the Quality of English Language

Objectives

1. Objective is overly broad and conceptually overloaded as the study simultaneously explores competencies, components, and framework conditions without clearly prioritizing the primary phenomenon of interest.
2. The title suggests exploration of APNs' experiences, but the objective shifts toward developing an APN role concept. These are distinct qualitative aims.
3. The study alternates between "hospital setting," "clinical setting," and "APN-led clinic," creating uncertainty regarding the exact setting under investigation.

Methodology

1. Qualitative descriptive studies usually emphasize low interpretation, whereas reflexive thematic analysis (Braun & Clarke) is interpretive/constructivist. Philosophical alignment is unclear.
2. The authors never specify whether the study follows constructivist, interpretivist, or pragmatic paradigms, which is essential in qualitative research.
3. Combining APNs from Switzerland, USA, and Canada introduces major contextual heterogeneity. Healthcare structures, APN regulations, reimbursement systems, and scopes of practice differ substantially.

4. Snowball sampling and purposive recruitment are mixed without explaining why each strategy was chosen.
5. Nineteen interviews are included, but no rationale for why this number was sufficient beyond vague "code saturation."
6. Reflexive thematic analysis generally discourages rigid saturation claims because meaning generation is theoretically infinite (Braun & Clarke, 2021).
7. Authors claim inductive analysis, yet interview questions were explicitly based on Hamric & Hanson's framework. This indicates deductive influence.
8. The first author was an APN with extensive expertise, but no detailed reflexive account explains how prior assumptions may have influenced interpretation.
9. The actual interview guide is absent, limiting reproducibility and methodological transparency.
10. USA/Canada interviews occurred in 2023, Swiss interviews in 2024. Healthcare policy changes over time could influence responses.
11. The manuscript confuses credibility with reliability. "Reliability" is generally avoided in qualitative paradigms.
12. The manuscript states the study falls outside the Human Research Act, yet informed consent and interviews involving professionals were conducted. More ethical clarification is needed regarding institutional permissions and international participants.

Results

1. Themes are presented as categories without interpretation of relationships between them.
2. Large quotations dominate the section, while author interpretation is limited.
3. Given multinational sampling, comparative insights between Switzerland and North America are absent.
4. "Continuity of care" and "transitional care" substantially overlap conceptually, reducing thematic clarity.

Discussion

1. Much of the discussion reiterates findings instead of critically interpreting them.
2. No conflicting evidence or limitations of APN-led care models are discussed.

3. The discussion continuously validates Hamric rather than generating new theoretical contributions.
4. The manuscript claims relevance to Swiss healthcare but inadequately discusses Swiss workforce, financing, or policy barriers in depth.
5. The study's small qualitative sample cannot justify broad policy-level conclusions regarding national APN regulation.
6. No mention of methodological limitations, contextual constraints, or transferability concerns.

Conclusion

1. The statement that Swiss APNs "have the potential to fulfill this role" is insufficiently supported by limited qualitative perceptions alone.
2. Conclusion is extremely lengthy. Max 70 words and No references should be used

Response 28:

We thank the reviewer for the comprehensive and insightful feedback on the manuscript. All comments regarding the quality of the English language have been addressed. The entire manuscript has been revised for language to improve clarity, readability, consistency, and linguistic accuracy. Corresponding revisions have been made throughout the manuscript.