Impact, scope of practice and competencies of Advanced Practice Nurses within APN-led models of care for young and middle-aged adult patients with multimorbidity and/or complex chronic conditions in hospital settings: a scoping review protocol

Gabriele Bales, Wolfgang Hasemann, Reto W Kressig, Hanna Mayer

ABSTRACT

Introduction The increase of young and middle-aged adult patients with multimorbidity and/or complex chronic conditions has created new challenges for healthcare systems and services. Advanced Practice Nurses (APNs) play an essential role in treating these patients because of their expertise and advanced nursing skills. Little is known about competencies, scope of practice and impact of APNs within APN-led care models for young and middle-aged adult patients with multimorbidity and/or complex chronic conditions in hospital settings. The objective of this scoping review is to describe the impact, scope of practice and competencies of APNs within APN-led care models for young and middle-aged adult patients in hospital settings.

Methods and analysis This scoping review will be conducted using the methodological framework proffered by Arksey and O’Malley, incorporating the methodological enhancement of Levac et al. It will comply with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) for Scoping Reviews’ guidelines of Tricco et al. Systematic research will be conducted in the databases MEDLINE (PubMed), CINAHL (EBSCO), EMBASE (Ovid), CENTRAL and PsycINFO (Ovid) using all recognised keywords, index terms and search strings. Grey literature will be scanned. Bibliography of all selected studies will be hand searched. Studies will be selected based on defined inclusion and exclusion criteria, screened by title and abstracts. Data from full-text articles meeting the inclusion criteria will be extracted independently by two authors. Disagreements in evaluation will be discussed and resolved by consensus. Results will be reported in the form of descriptive tables. Narrative summery is used to present the results of the review in the context of the study’s objectives and questions.

Ethics and dissemination This scoping review does not require ethics approval. The review will be handed in as part of a doctoral thesis and published in a peer-reviewed journal.

Trial registration number OSF 4PM38.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This will be the first scoping review about the scope of practice, competencies and the overall impact of Advanced Practice Nurses (APNs) within APN-led models of care in hospital settings of multimorbidity and/or complex chronically ill young and middle-aged adult patients.

⇒ The following guidelines are used: Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews.

⇒ The search for relevant articles will be conducted in English and further languages, if they can be translated into English with translation tools.

⇒ The level of evidence might be low as there might not be a lot of research published yet.

⇒ According to a scoping review, the risk of bias and the quality of evidence of the included articles will not be assessed.

INTRODUCTION

Multimorbidity and complex chronic conditions are significant and rising challenges to Europe’s health systems, affecting approximately 50 million people. The prevalence of multimorbidity and complex chronic conditions is increasing, not only among the elderly, where the majority of integrated healthcare is currently focused, but also among young and middle-aged adults. International studies have shown that up to 50% of these adults are already affected by multimorbidity and complex chronic conditions, therefore the focus of healthcare services should increasingly be on the treatment and care needs of young and middle-aged adults. Adults with multimorbidity and/or complex chronic conditions of any age...
are more likely to suffer from fragmented care,\textsuperscript{11} inadequate quality of existing guidelines, coordination problems and adverse drug reactions, polypharmacy and conflicting treatment recommendations.\textsuperscript{35,12,15} They generate significantly higher costs for the healthcare systems. Studies have shown that middle-aged adults with more than one chronic condition are at a significantly higher risk of adverse health outcomes than those with only one or no chronic condition.\textsuperscript{14} These outcomes include high utilisation of healthcare services, greater need for care, longer average length of hospital stay, more frequent hospital readmissions, increased number of physician contacts, lower life expectancy, decreased health-related quality of life, impaired functional status combined with poor mental health, premature mortality and lower capacity for treatment burdens.\textsuperscript{14-19}

Multimorbidity and complex chronic conditions are terms that are widely used within multidisciplinary teams and healthcare settings; however, these terms are subject to different definitions.\textsuperscript{20,21} Multimorbidity is defined by the majority as the coexistence of two or more chronic conditions, one of which is not necessarily more important than the other.\textsuperscript{22} Multimorbidity can be associated with complexity, but the term ‘complex chronic conditions’ not only describes the number of chronic conditions but also includes other dimensions of inter-related components of care, such as psychosocial and socioeconomic factors and the physical environment.\textsuperscript{23} Patients with complex chronic conditions can thus be described as those who have (1) more than one chronic condition, (2) high-risk and high-cost care needs, (3) mental health challenges, (4) biopsychosocial needs, and/or (5) socioeconomic or physical anomalies.\textsuperscript{23,24}

The needs and care requirements of multimorbid and/or complexly chronically ill younger and middle-aged adults differ significantly from those of older adults. This is due to the more complex life situations experienced by adults in contrast to older adults, as they bear responsibility for their professional activities and career development, but also for their families and minor children or their own parents.\textsuperscript{25,26} Additionally, preventive and health promoting behaviours to influence health behaviours and the ageing process may be better integrated in middle-aged adults than in older adults.\textsuperscript{20} To address these complex needs, the implementation of integrated care models are especially necessary.\textsuperscript{27} Integrated care is defined as a model of care that is person-centred and structured to support coordinated and proactive care directed by an interprofessional core team and principal coordinator communicating and collaborating within and across health sectors,\textsuperscript{28} whereas hospitals can play a crucial role in the coordination of chronic care, as they play a principal role in integrating care programmes and leading patients through the healthcare system.\textsuperscript{29} Care coordination by a defined point of contact as a lead healthcare professional is one of the central elements of integrated care\textsuperscript{30,31} and requires certain professional competencies, complex knowledge-based actions, skills, and attitudes to combine and mobilise existing and available resources to ensure safe and quality outcomes for patients and populations.\textsuperscript{32} In particular, this person must obtain skills in knowledge sharing and collaboration with other professionals from different disciplines, organisations and professions for the care of people with multimorbid and complex chronic conditions to ensure a shared view of complex problems and guarantee continuity and quality of care.\textsuperscript{33}

Consequently, Advanced Practice Nurses (APNs) are especially suited to retain a leading position within integrated care models, as their expanded nursing knowledge and advanced skills make them well-positioned to provide and coordinate care. Furthermore, they improve the self-management skills and health literacy of multimorbid and complex chronically ill patients.\textsuperscript{24,34-36} Studies have shown that advanced healthcare knowledge of APNs and their extended experience in nursing practice lead to optimised and improved patient health outcomes as well as increased knowledge of disease and available services. In addition, APNs in interprofessional healthcare teams offer a cost-effective alternative to time-intensive and complex management.\textsuperscript{34,37,38} According to the definition of the International Council of Nurses (ICN), an APN ‘is a generalist or specialised nurse who has acquired, through additional graduate education (minimum of a master’s degree), the expert knowledge base, complex decision-making skills and clinical competencies for Advanced Nursing Practice, the characteristics of which are shaped by the context in which they are credentialed to practice (adapted from ICN, 2008)\textsuperscript{39} (p.1). The two most commonly identified types of APNs are Clinical Nurse Specialist (CNS) and Nurse Practitioner (NP).\textsuperscript{40} The focus of the CNS is to improve the quality of care provided and patient outcomes through leadership to staff nurses and implementing system-related interventions. Alternatively, the role of the NP focuses more on direct clinical practice and tasks that may be shared with physicians.\textsuperscript{41}

Tracy\textsuperscript{42} states that Advanced Nursing Practice is ‘the patient-focused application of an expanded range of competencies to improve health outcomes for patients and populations in a specialised clinical area of the larger discipline of nursing’\textsuperscript{42} (p. 79). In the APN model of Hamric and Hanson, competencies define the standards and scope of practice consisting of six core competencies: (1) direct clinical practice, (2) guidance and coaching, (3) evidence-based practice, (4) leadership, (5) collaboration, and (6) ethical decision-making\textsuperscript{42} (p. 90).

In the literature, the term ‘nurse-led’ subsumes APNs, CNSs and staff nurses, but all have differing scopes of practice. However, heterogeneity in nursing roles and titles affects the generalisability of the results.\textsuperscript{43} Therefore, to determine how APNs within APN-led models of care contribute to the management of multimorbidity and/or complex chronic conditions among adults, it is essential to understand the various roles and functions of APNs and their impact. A crucial part of the development
process of APN roles in general should be a pure definition of specific features of the role—its required scope of practice; the activities undertaken; and the skills, competencies, attributes, and areas of action required. Furthermore, it is critical to clearly define the APN role and its objectives to reduce role ambiguity and enhance the effective implementation and adoption of such APN roles.

Various studies have been conducted to explain and describe the roles of APNs, but they comprise only the areas of primary care, psychiatric and mental health-care, the care of patients following hip fracture, geriatric oncology care and oncology. A recent scoping review published by Gonçalves et al describes the characteristics, differences and similarities between various nurse-led models of care for older adults with multimorbidity in hospital environments. McParland et al recently published a systematic review to identify which types of nurse-led interventions exist for adults with multimorbidity and which outcomes are positively affected. Gordon et al created a scoping review to determine what is known about nurse-led care models for patients with complex chronic conditions.

In this phase, inclusion and exclusion criteria are established. These are used to identify the relevant studies. The ‘Population, Concept, Context’ (PCC) framework and types of sources were used to specify the inclusion and exclusion criteria as follows.

Participants
This review relates to studies that include APN-led models of care in hospital settings, whose participants are adults between 18 and 64 years with multimorbidity (two or more chronic diseases) and/or complex chronic conditions. We will screen for APNs within APN-led models of care in hospital settings who work in direct patient care and have a master’s degree in accordance with the ICN definition.

We will exclude studies that do not provide outcomes on the impact of APN roles within APN-led models of care, or on the competencies and scope of practice of APNs within these models of care in hospital settings. Studies that are only focused on adults ≥65 years and older and those that do not focus on APNs will also be excluded. In addition, studies of APN-led models of care in hospital settings, whose participants are younger and middle-aged adults who are being treated primarily for oncologic diseases and those who have major psychiatric conditions like bipolar disorders, major depression and schizophrenia.

Methods and analysis
Protocol design
This scoping review protocol will follow the PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. The review will be conducted according to the five stages described by the Arksey and O’Malley framework and the enhancements proposed by Levac et al. The five stages of review include (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data and (5) collating, summarising and reporting the results. The original framework proposal by Arksey and O’Malley includes an optional consultation (Phase VI). This is conducted with key stakeholders to obtain additional guidance on potential studies and feedback on the results of the scoping review. While consultation with key stakeholders would be a valuable exercise, this will not be carried out due to time and budget constraints.

Stage 1: identifying the research questions
This scoping review protocol is guided by the following questions:

1. What is the scope of practice of APNs within APN-led models of care for young and middle-aged adult patients with multimorbidity and/or complex chronic conditions in hospital settings?
2. What are the competencies of APNs within APN-led models of care for young and middle-aged adult patients with multimorbidity and/or complex chronic conditions in hospital settings?
3. What overall impact do APN roles have within APN-led models of care for young and middle-aged adult patients with multimorbidity and/or complex chronic conditions in hospital settings?

Stage 2: identifying relevant studies
Eligibility criteria
In this phase, inclusion and exclusion criteria are established. These are used to identify the relevant studies. The ‘Population, Concept, Context’ (PCC) framework and types of sources were used to specify the inclusion and exclusion criteria as follows.

Participants
This review relates to studies that include APN-led models of care in hospital settings, whose participants are adults between 18 and 64 years with multimorbidity (two or more chronic diseases) and/or complex chronic conditions. We will screen for APNs within APN-led models of care in hospital settings who work in direct patient care and have a master’s degree in accordance with the ICN definition.

We will exclude studies that do not provide outcomes on the impact of APN roles within APN-led models of care, or on the competencies and scope of practice of APNs within these models of care in hospital settings. Studies that are only focused on adults ≥65 years and older and those that do not focus on APNs will also be excluded. In addition, studies of APN-led models of care in hospital settings, whose participants are younger and middle-aged adults who are being treated primarily for oncologic diseases and those who have major psychiatric conditions like bipolar disorders, major depression and schizophrenia.

Concept
The concepts of interest in this scoping review include any impact of APNs within APN-led models of care, APN competencies and their scope of practice within APN-led models of care for adults with multimorbidity and/or complex chronic conditions in hospital settings. Competencies of APNs may include, but are not restricted to, the central and core competencies—direct clinical practice, guidance and coaching, evidence-based practice, leadership, collaboration and ethical decision-making—of APNs as defined by Hamric and Hanson and practice activities performed by APNs. The scope of practice of APNs may include, but is not restricted to, areas of responsibility of APNs working within APN-led models of care.
Box 1  Proposed search strategy to search MEDLINE (PubMed)

Search terms


# 3 (((“Infant”[MeSH] OR “Child”[MeSH] OR “Adolescent”[MeSH]) NOT “Adult”[MeSH])

# 4 AND #2 AND #3 NOT #4

Context
This scoping review considers studies that have APN-led models of care within hospital settings, including adults with multimorbidity and/or complex chronic conditions. The overall impact of APN-led clinics will be considered as clinical, patient and system outcomes.

Types of sources
There will be no restrictions on the methodology of the study. Qualitative, quantitative, mixed-methods studies, systematic reviews, and grey literature sources as unpublished studies will be included.

Search strategy
The search strategy objectives are to find published studies and reviews, opinion articles and other papers that are relevant for answering the research questions. A preliminary search of MEDLINE (PubMed) and CINAHL (EBSCO) was conducted. Box 1 shows the proposed search strategy to be used to search MEDLINE (PubMed). The result was that there was no published review on the impact, competencies and scope of practice of APNs within APN-led models of care for adult patients with multimorbidity and/or complex chronic conditions in hospital settings has been conducted. Thus, a threefold search strategy will be used, including all identified keywords and index terms, to find both published and unpublished studies. First, systematic research will be conducted in the electronic databases MEDLINE (PubMed), CINAHL (EBSCO), EMBASE (Ovid), CENTRAL and PsycINFO (Ovid) using all recognised keywords and search strings. Advice on developing a search strategy was sought from an academic librarian at the University of Basel, Switzerland. Second, a hand search will be undertaken by checking the lists of references of the relevant papers and reviews to identify additional studies. Third, grey literature will be searched using OpenGrey and ProQuest dissertations and theses—abstract and index to identify unpublished studies. Grey literature will be examined using the following terms within OpenGrey: nurse-led care, scope of practice, competencies and scope of practice of APNs and impact of APN-led models. The data extraction table will also be modified as needed throughout the data extraction process. The modifications will then be specified during the full scoping review. Any differences between the reviewers will be resolved by discussion until consensus is reached. The selection of

Stage 3: study selection
Following the search, all recognised articles in the aforementioned databases and grey literature will be organised and uploaded into EndNote V.20 (Clarivate Analytics, Pennsylvania, USA), and all duplicates will be erased. One reviewer will evaluate all studies against the inclusion and exclusion criteria based on the title and abstract screening. Full-text reports will also be obtained for all search results that potentially meet the inclusion criteria. Then, the full texts will be screened against all the inclusion criteria by two reviewers. Publications that are considered relevant by only one of the two reviewers will then be discussed until consensus is reached. If full-text papers will be excluded, as all parties agree that they do not meet the inclusion criteria, the reasons for exclusion will still be provided in the final scoping review. All the results of the research will be reported in the final report in full and will also be presented in a PRISMA-ScR flow diagram (see figure 1) recommended by the Joanna Briggs Institute (JBI) as part of methodological guidance for scoping reviews.

Data extraction
Data are then extracted from the papers that are included in the review by a reviewer, using a data extraction table designed by the reviewer. The extracted data contains the following specific details: information about the authors, dates of publication, titles of the article, journals or other sources of publication, study location (country of study), type of study, details about the participants, the competencies and scope of practice of APNs and impact of APN-led models. The data extraction table will also be modified as needed throughout the data extraction process. The modifications will then be specified during the full scoping review. Any differences between the reviewers will be resolved by discussion until consensus is reached. The selection of
the articles will be processed in three steps: (1) selection of the articles based on title/abstract by one reviewer, (2) the resulting full text will be screened for eligibility by two reviewers and (3) in case of disagreement between the two reviewers, the differences that arise will be resolved through discussion until consensus is reached.

**Stage 4: charting the data**

The data extraction form is created by the researcher. Items are displayed in a tabular format that are most appropriate for the scope and objective of this review. The data are processed graphically, and the study characteristics are extracted: authors, year of publication, article title, source countries and participants. The scope of practice of APNs is presented as predischarge scope of practice, post discharge scope of practice and bridging transition scope of practice. Their competencies are presented following Hamric and Hanson. In addition, the overall impact of APN-led clinics will be presented as clinical, patient and system outcomes. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

**Stage 5: collating, summarising and reporting the results**

Data analysis will be conducted. The tables will be accompanied by a narrative summary describing how the results relate to the objectives and questions of the study and will be depicted graphically or in tabular form. These findings will be discussed in relation to practice and research.

**PATIENT AND PUBLIC INVOLVEMENT**

Neither patients nor the public will be engaged in the development of this scoping review.
DATA MANAGEMENT
Not applicable.

ETHICS AND DISSEMINATION
Ethical approval is not a necessity for the review. No primary data will be generated; all data will be sourced from publicly available documents. The review study will be conducted as part of a doctoral dissertation, an ethical prescreening of the research project was conducted at the University of Vienna, Austria, where the responsible researcher is completing her doctoral studies. The report will be made available at conferences and other relevant and appropriate platforms. Additionally, it will be published in a peer-reviewed journal.

Author affiliations
1 University Department of Geriatric Medicine, FELIX PLATTER, Basel, Switzerland
2 Faculty of Social Sciences, Department of Nursing Science, University of Vienna, Vienna, Austria
3 Medical Faculty, University of Basel, Basel, Switzerland
4 Department of General Health Studies, Division Nursing Science with focus on Person-Centered-Care-Research, Karl Landsteiner University of Health Sciences, Krems, Austria

Twitter Gabriele Bales @BalesGabriele
Collaborators Not applicable.
Contributors GB was responsible for drafting the manuscript and is the guarantor. WH, RWK and HM were responsible for the critical revision of the manuscript, advised, edited and made substantial amendments. RWK and HM supervised the scoping review protocol.

Funding Open access funding provided by University of Vienna.

Competing interests None declared.

Patient and public involvement Patients and or the public were not involved in the design, or conduct, or reporting or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/4.0/.

ORCID iD Gabriele Bales http://orcid.org/0000-0001-9190-191X

REFERENCES
33 Hajaief A et al. How to support integration to promote care for people with Multimorbidity in Europe? 2017: world health organization, Regional Office for Europe,


