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Everyday lives of middle-aged persons living with multimorbidity: protocol of a mixed-methods systematic review

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ABSTRACT

Introduction Multimorbidity is the simultaneous occurrence of several (chronic) diseases. Persons living with multimorbidity not only have complex care needs, but the burden of care often has a negative impact on their family lives, leisure time and professional activities. The aim of this project is to systematically review the literature to assess how multimorbidity affects the everyday lives of middle-aged persons, and to find out what abilities and resources help in the development of coping strategies to overcome the challenges of living with it.

Methods and analysis We will systematically search for studies reporting on the everyday life experiences of middle-aged persons (30–60 years) with multimorbidity (≥2 chronic conditions) in MEDLINE, CINAHL, PsycINFO, Social Sciences Citation Index, Social Sciences Citation Index Expanded, PSYNDEX and The Cochrane Library from inception. We will include all primary studies that use quantitative, qualitative and mixed methodologies, irrespective of publication date/study setting.
Two independent reviewers will screen titles/abstracts/full texts, extract data from the selected studies and present evidence in terms of study/population characteristics, data collection method and the phenomenon of interest, that is, everyday life experiences of middle-aged persons with multimorbidity. Risk of bias will be independently assessed by two reviewers using the Mixed Methods Appraisal Tool. We will use a convergent integrated approach on qualitative/quantitative studies, whereby information will be synthesised narratively and, if possible, quantitatively.

Ethics and dissemination Ethical approval is not required due to the nature of the proposed systematic review. Results from this research will be disseminated at relevant (inter)national conferences and via publication in peer-reviewed journals.

PROSPERO registration number CRD42021226699.

Strengths and limitations of this study

- This is the first systematic review on the everyday lives of middle-aged persons with multimorbidity and will establish a basis on which to develop evidence-informed interventions and promote resilience in this population.
- The research will focus specifically on the understudied population of middle-aged persons with multimorbidity because (secondary) preventive measures must be taken to prevent further complications in these patients' care trajectories as they age.
- Although such everyday life experiences are extensively described in grey literature sources such as blogs and social media, the scope of this research does not allow the inclusion of non-peer-reviewed evidence.
- Apart from support from the public organisation 'Stiftung Gesundheitswissen', patients will not be involved in the development of the systematic review. However, its findings will be incorporated in the development of interview guides for use in qualitative research to be conducted as part of a wider research project.

INTRODUCTION

Multimorbidity is the simultaneous occurrence of several (chronic) diseases.[1] Persons with multimorbidity not only have complex care needs, but the burden of their care often has a substantial negative impact on their family lives, leisure time and professional activities.[2–5] As meeting such complex care needs involves self-management (eg, daily intake of multiple medications, self-monitoring, life-style changes), visits to physicians and tests (eg, regular check-ups with the general practitioner and specialists, hospital admissions and rehabilitative stays), it is time-consuming and eats into financial resources (eg, loss of earnings or early retirement).[2 3 6–8] Furthermore, complex care structures also place substantial demands on the organisational, social and emotional resources of those affected and the people close to them for such activities as completing paperwork, finding out about treatment options, making treatment decisions, choosing suitable physicians and hospitals, applying for disability certificates, understanding doctors' letters and applying for social support.[4 9] These resources are required in the coordination of

the wide range of everyday tasks that arise when caring for people with several diseases.

Although over 50% of patients with multimorbidity are under 65 years of age, multimorbidity studies generally focus on an older population.[10–12] The care trajectories of middle-aged persons with multimorbidity often affect other fields besides the purely medical, may last for decades, and become increasingly complicated with advancing age.[13] To establish a sustainable, individual supply structure at an early stage, both behavioural and preventive approaches are therefore necessary. These should not be solely anchored in the health system but also in the patients' social and professional lives. Additionally, the care of middle-aged persons with multimorbidity requires a different approach than for older adults as there is evidence that multimorbidity patterns differ depending on age.[12] For example, depression has been found to be the most prevalent condition in multimorbid women up to the age of 54 years, followed by hypertension from 55 years onwards.[14]

In order to support the health and well-being of persons with multimorbidity, it is necessary to take into account how the diseases and the delivery of care affect their lives. Patients' families, leisure activities and professional lives, as well as points of contact with the healthcare system, are particularly important in this regard. To increase patient safety in middle-aged persons with multimorbidity, preventive measures should be taken that enable them to manage their lives and healthcare in a way that lessens the impact of the environmental factors that may otherwise exacerbate their disease and care burden. In the long term, it is also important to ensure that over inappropriate, under inappropriate and inappropriate use of healthcare is avoided. Promoting an environment that encourages community involvement and participation can make an important contribution to improving the everyday lives of those affected.

The aim of this project is to systematically review the literature to assess how multimorbidity affects the everyday lives (ie, by focusing on family, leisure and work domains) of middle-aged persons and identifying abilities and resources that can help them develop coping strategies to overcome the challenges of living with multimorbidity.

METHODS AND ANALYSIS

The present protocol will follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Protocols checklist[15] (see online supplemental file 1).

Design

Mixed-methods systematic review using the convergent integrated approach. By using this method, data will be transformed in a way that enables quantitative and qualitative data to be combined, and the synthesis of quantitative and qualitative studies to occur simultaneously.[16]

Criteria for considering studies for this review

Types of studies

We will include primary research studies that use quantitative (eg, surveys), qualitative (eg, interviews, focus groups) and mixed-methods methodologies. Systematic reviews and meta-analyses will not be included. If a systematic review is relevant to our topic, we will screen its reference list for potentially eligible studies that were not identified in our electronic literature searches (see section on search methods used to identify studies).

We will exclude case reports and articles, such as conference abstracts, narrative reviews and editorials, that do not include a detailed description of methods and/or results (table 1).

Table 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Type of studies	
► Quantitative, qualitative or mixed-methods studies ► No restriction in publication date or study setting. Language of the studies limited to German, English, French, Spanish, Dutch and Russian.	► Case reports ► Articles without details of methods and/or results (ie, conference abstracts, narrative reviews, editorials, study protocols, ongoing studies) ► Systematic reviews/meta-analyses
Type of participants	
► Age: 30–60 years (mean/median age, at least 80% of results stratified for this age group) ► Multimorbidity: two or more simultaneous chronic conditions	► Caregivers, family members and healthcare professionals ► Persons with intellectual disabilities
Phenomenon of interest	
► Studies addressing everyday life domains such as family/social life, leisure time, work–life balance, activities of daily living, financial constraints AND/OR abilities/resources used to cope, such as coping strategies, all types of support such as health and social services, networks, etc from the patient's perspective	► Studies that only address the experiences of caregivers, family members and healthcare professionals

Types of participants

We will include middle-aged persons (mean or median age between 30 and 60 years) with multimorbidity (two or more simultaneous chronic conditions).[1] Studies focusing on patients with one chronic disease will be included when authors have reported on at least one additional chronic condition in at least 80% of the study population. Studies reporting results that have been stratified for middle-aged or patients with multimorbidity will also be included.

Studies that only address the experiences of caregivers, family members and healthcare professionals, will be excluded (table 1).

Phenomenon of interest

Our phenomenon of interest will focus on the everyday life domains of persons living with multimorbidity, including their family lives, leisure time and career/work. We will also review strategies used to cope with multiple chronic conditions, including problem-focused and emotion-focused strategies.

Search methods used to identify studies

Electronic searches

We will search the following electronic sources from inception to 10 December 2020 using a combination of Medical Subject Headings and keywords: MEDLINE, CINAHL, PsycINFO, Social Sciences Citation Index, Social Sciences Citation Index Expanded, PSYNDEX and The Cochrane Library. We will not apply any restrictions to publication date or language.

We will follow the recommendations of Peer Review of Electronic Search Strategies and develop the final search strategy in collaboration with an expert medical science librarian.[17]

The electronic search strategy for the MEDLINE database is provided in table 2. This search strategy will be adapted for use in the other databases.

Other resources

We will identify potentially eligible studies that are not captured by our electronic database searches by examining the reference lists of included studies (backward citation tracking), relevant systematic reviews and meta-analyses identified in the literature search, and by carrying out searches of cited references (forward citation tracking) using the Web of Science Core Collection.

Study records

Data management

Bibliographic details of all identified references will first be uploaded to Endnote and then converted into COVIDENCE for title, abstract and full-text screening. Duplicates will be removed.

Selection of studies

Two review authors (AIG-G and RB) will independently screen the title and abstract of every identified study to determine which should be assessed further. Before screening, a stepwise calibration test will be performed on a sample of 30 studies,[18] with the aim of achieving 80% agreement between reviewers. If 80% agreement is not reached, our inclusion and exclusion criteria will be refined, and the calibration repeated until this threshold is met. We will report changes to the inclusion and exclusion criteria that result from the calibration test as deviations from the published protocol. The full text of potentially eligible papers will then be retrieved and independently assessed for eligibility by two reviewers (AIG-G and RB). Any discrepancy will be resolved through discussion and consensus, and if needed with the help of a third reviewer (MvdA).

We will present a PRISMA flow-chart to illustrate the study-selection process.[15]

Data collection

Two review authors (AIG-G and RB) will independently extract key study and participant characteristics from all studies that fulfil the inclusion criteria, and report data on outcomes. Any disagreement will be resolved by discussion, or, if necessary, by a third author (MvdA). A calibration test similar to the one described above will precede data extraction.

Data items

We will stratify extracted data according to study type (ie, observational qualitative, quantitative and mixed methods; interventional) using standard extraction templates in Excel datasheets. Extracted data will be classified under the following headings: Study reference (ie, first author, year of publication, title); Study aim; Study characteristics (ie, study design, country of origin, setting, sample size); Population characteristics (eg, age, sex, definition of multimorbidity; Data collection method (eg, interview or questionnaire); Description of phenomenon of interest (eg, functional/ emotional/ social disabilities, work productivity, coping strategies) and results of described phenomenon of interest (eg, proportion of participants whose work productivity has declined) (table 3).

Dealing with duplicate and associated publications

In the event of multiple publications of a single study, we will maximise the information yield by collating all available data and using the most complete data set, aggregated across all known publications.

Assessment of risk of bias in included studies

We will use the Mixed Methods Appraisal Tool to conduct the risk of bias (RoB) assessment.[19] One review author (AIG-G) will assess the RoB and a second reviewer (RB) will verify the assessment. Assessments will be compared, and disagreements resolved through discussion and consensus, or following consultation with a third author if necessary (MvdA).

Data synthesis

Should the included study pool permit quantitative information synthesis, we will conduct a mixed-methods systematic review using a convergent integrated

Table 2 Search for everyday life experiences of middle-aged patients with multimorbidity

1	(Comorbid* or co-morbid* or multimorbid* or multi-morbid* or multiple morbid* or multiple diseases or multiple chronic conditions or multiple chronic diseases or multiple chronic morbidities or multiple long-term conditions or multiple long-term health conditions).ti,ab,kf.	199 674
2	exp Comorbidity/	112 002
3	Multiple Chronic Conditions/	491
4	Middle Aged/	4 417 485
5	Adult/	5 064 713
6	(2 or 3) and (4 or 5)	69 046
7	1 or 6	240 361
8	(normal life or everyday life or daily life).ti,ab,kf.	33 184
9	(family or friends or relatives).ti,ab,kf.	883 619
10	(work life or employment or unemploy* or sick leave days or productivity or work capacity).ti,ab,kf.	140 890
11	(leisure or spare time or free time or hobby or hobbies or private life or social life).ti,ab,kf.	24 911
12	Work Performance/	908
13	Social Environment/	43 077
14	exp "Activities of Daily Living"/	104 013
15	exp Leisure Activities/	240 547
16	or/8–15	1 407 335
17	(disparit* or barrier* or challenge* or discrimination or disadvantage* or disabilit* or handicap* or financial difficult* or financial problem*).ti,ab,kf.	1 422 546
18	(coping strateg* or abilities or capacities or coaching or resilience or motivation or facilitator* or financial protection or material resources or telemonitoring application or home-based or web-based or mobile health tool*).ti,ab,kf.	310 612
19	(experience* or perceive* or perspective* or preference*).ti,ab,kf.	1 702 742
20	Financial Support/	3806
21	Internet-Based Intervention/	309
22	Adaptation, Psychological/	95 566
23	Social Support/	71 764
24	or/17–23	3 210 947
25	(health care or healthcare or health system or health service* or community or public policy or organization* or government* or business or rehabilitative care or care provider* or care management or support or social network or workplace or employer* or company or district or neighborhood or neighbourhood).ti,ab,kf.	2 513 804
26	Occupational Health Services/	10 585
27	Occupational Health/	34 007
28	exp Community Health Services/	307 375
29	Health Services for Persons with Disabilities/	128
30	Social Work, Psychiatric/	2684
31	Personal Health Services/	1946
32	Preventive Health Services/	13 657
33	Social Work/	15 404
34	Urban Health Services/	3679
35	exp Patient-Centered Care/	20 825
36	Self-Help Groups/	9173
37	Health Planning Organizations/	893
38	or/25–37	2 740 112
39	(living with multimorbidity or living with multiple chronic conditions or living with multiple chronic diseases or coping with multimorbidity or coping with multiple chronic conditions or coping with multiple chronic diseases).ti,ab,kf.	89
40	(7 and 16 and 24 and 38) or 39	3869

10 December 2020—Medline (medall) via Ovid.

Table 3 Data extraction framework

Bibliometrics	Description	Coding
Study identification	First author, year of publication, title	(Journal's description)
Study characteristics	Study aim	(Authors' description)
	Type of study	Observational (ie, qualitative, quantitative mixed methods) or interventional study
	Geographical location	Country
	Study setting	Inpatient, outpatient, general population database
Population characteristics	Sample size	Number of patients
	Age	(Years)
	Sex	(no of females)
	Definition of multimorbidity	(Authors' description)
Methods of data collection	Data collection method	Interview, semistructured interview, survey, focus group, questionnaire (authors' description)
	Outcomes measured	For example, Functional/emotional/social disabilities, work productivity loss, coping strategies (authors' description)
Results/conclusions		(Authors' description)

approach that (1) synthesises qualitative data by means of thematic synthesis, (2) synthesises quantitative data, and performs meta-analysis if applicable, and in a final step, (3) synthesises both (2) and (2) following the methodology described by Sandelowski *et al* and Pearson *et al*.[20 21]

Descriptive analyses will be carried out when a lack of studies makes meta-analyses unfeasible, or heterogeneity prevents quantitative information synthesis. Heterogeneity will first be assessed qualitatively (in terms of study design, population and outcomes), and, assuming the qualitative assessment does not preclude meta-analyses, by means of χ^2 and additional tests.

Planned sensitivity and subgroup analysis

We plan to conduct sensitivity analyses to determine the impact of bias by excluding studies that carry a high risk of it (irrespective of heterogeneity). If the study data allows, we also plan to conduct subgroup analyses to examine whether the everyday lives of persons living with multimorbidity are affected by age, sex, type of index disease or disease cluster, country of origin and living situation.

Timeline for the review

At the time of submission, we will already have completed electronic searches, piloted the study selection process and formally begun screening search results with respect to the eligibility criteria. This systematic review is scheduled to end in June 2021.

Patient and public involvement

The public non-profit organisation 'Stiftung Gesundheitswissen' was involved in planning this research and will assist in the dissemination of results.

ETHICS AND DISSEMINATION

Due to the nature of the proposed systematic review, ethics approval is not required.

This systematic review is embedded in the MUltimedication in MIddle-Aged persons project, which aims to shed light on the challenges experienced by middle-aged persons with multimorbidity and polypharmacy on the one hand, and the self-management strategies employed by this group on the other. The results of the review will help in the development of an interview guideline for our target group. These interviews will be followed by interviews with relevant stakeholders such as general practitioners.

We will disseminate our study findings to healthcare providers and patients and present them at relevant national and international conferences. We also aim to publish the results of the study in a peer-reviewed journal.

Acknowledgements The authors would like to thank Phillip Elliott for editing the manuscript.

Contributors AIG-G wrote the initial draft of the protocol. MvdA is the guarantor of the review. JN assisted in the identification of databases and reviewed the search strategy. AIG-G and RB independently carried out all steps of the systematic review. TSD, M-SB, MD, BSM and MvdA are cosupervisors of this project, provided advice throughout the development of the protocol, and contributed to the revision of the manuscript. All authors read and approved the final manuscript.

Funding This work is being carried out on behalf of Stiftung Gesundheitswissen (LW03-20).

Disclaimer The organisation has played no role in developing the protocol for this review.

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.

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PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 **4**:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	1-3
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☐	NA
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	79-80
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	5-49
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	336-341
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☐	☐	NA
Support					
Sources	5a	Indicate sources of financial or other support for the review	☒	☐	344-346
Sponsor	5b	Provide name for the review funder and/or sponsor	☒	☐	344-346
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☒	☐	344-346
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	97-136
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	133-136

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	☒	☐	148-169 Table 1
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	172-190
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	172-184 Table 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	192-195
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	196-208
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	209-213
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	214-224 Table 3
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	214-224 Table 3
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☒	☐	229-233
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☒	☐	234-249
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☒	☐	234-249
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☒	☐	244-249
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☒	☐	234-249

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☒	☐	234-249
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☒	☐	234-249

NA = not applicable