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Development of an interprofessional person-centred care concept for persons with care needs living in their own homes (*interprof* HOME): study protocol for a mixed-methods study

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ABSTRACT

Introduction People receiving home care usually have complex healthcare needs requiring the involvement of informal caregivers and various health professionals. In this context, successful collaboration is an important element of person-centred care, which is often insufficiently implemented. Consequences might be found in avoidable hospitalisations. The aim of the study is to develop a care concept to improve person-centred interprofessional collaboration for people receiving home care considering the perspectives of all person groups involved.

Methods and analysis This study uses a mixed-methods design consisting of a literature review, several qualitative inquiries, a cross-sectional quantitative study and a final structured workshop. After a literature review (work package (WP) 1), we will explore the perspectives of people receiving home care (n=20), their relatives (n=20) and representatives of statutory health insurances (n=5) in semistructured interviews (WP2). Moreover, 100 individuals of each group (people receiving home care, relatives, registered nurses, general practitioners and therapists) involved in home care will answer a survey on collaboration that will be analysed descriptively (WP3). Additionally, monoprofessional focus groups (n=9) of registered nurses, general practitioners and therapists, respectively, will discuss current practices. Data will be analysed by qualitative content analysis. Best practice cases (n=8) will be analysed by a case-based qualitative content analysis based on data of observations of home visits and interviews (WP4). The findings of WP2 will be discussed in mixed focus groups (n=4) with 10 participants each (WP5). Considering the results of joint displays of WP3, WP4 and WP5, the interprofessional care concept and its implementation will be elaborated in an expert workshop (WP6).

Ethics and dissemination Ethical approval was obtained from all ethics committees of the project partners. Study results will be disseminated through publications, conference presentations, student education and advanced training of health professionals.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The greatest strength of the study is its participatory design, in which all groups involved in home care contribute actively to the development of the interprofessional person-centred care concept '*interprof* HOME'.
⇒ The mixed-methods approach (interviews, focus groups, observations, shadowings, survey, expert workshop) answers the research questions from different methodological angles and therefore provides deep insight into the topic.
⇒ Another strength is the interprofessional composition of the research team.
⇒ Constant discussions of data and the analysing process in subgroups and the whole study team result in a well reflected view on the material.
⇒ Although a limitation of this study might be the fact that, for instance, persons with dementia, aphasia and other restricting conditions will not be included, the perspective of their relatives will be considered.

Trial registration number NCT05149937.

INTRODUCTION

By the end of 2019, nearly 1 million (983 000) people in need of care in Germany were being cared for by 14 700 outpatient care services.[1] A further increase in the number of people receiving home care (PRHC) is expected in the coming decades—not only in Germany, but also in other European countries.[2]

The care for PRHC is very complex and is typically carried out by relatives as well as various health professionals, such as nurses and nursing assistants of outpatient care services, general practitioners (GPs), occupational therapists, speech therapists or physical

therapists (in the following summarises as 'therapists'), and persons of other professional backgrounds. Home care refers to the range of services provided to support persons to live safely at home, including caregiving, skilled services (such as nursing and therapy) and medical treatment. In Germany, home care is provided for people who have relevant care needs and/or cannot leave the house for therapy or medical treatment.[3 4] Health insurance funds pay for medication and therapy. Outpatient care services are organisations that employ registered and assistant nurses who provide nursing as well as medical and domestic services at home based on legally defined categories of long-term care needs. Costs are covered by long-term care insurance funds. Home care requires constant mutual coordination, which is reported to be rarely systematic and structured. Therefore, interprofessional communication is considered to be in need of improvement.[5] Insufficient cooperation and communication between the involved health professionals can lead to 'inconsistent care' due to problems in the transfer of information, as well as because of undesirable events and errors.[5] A lack of consistent communication structures among health professionals is identified as having a negative impact on the safety of those in need of care.[6]

The scientific literature reveals little about the views of health professionals or PRHC and their relatives on interprofessional collaboration in home care. In a German survey of professional nurses on the topic of essential tasks and problem areas, this setting plays only a marginal role. Cooperation with GPs in issuing prescriptions is seen as conflictual; improved communication, reduction of frictional losses and improved interface management are considered useful.[7] GPs and involved outpatient care services caring for persons with dementia assessed communication and documentation as part of the collaboration as cumbersome, irregular and unsatisfactory.[8] In a recent focus group study with GPs, GPs' representatives, managers of outpatient care services and welfare associations, all participants stated that collaboration is important for patient care. Mutual respect, a permanent contact person and an additional reimbursement for the collaboration were strived for to ensure continuity of patient care.[9] In a Spanish/Slovenic study defined structures, shared goals and team development were found to be critical factors for establishing and maintaining good collaboration between GPs and nurses in primary care,[10] while a Dutch qualitative study described mutual trust to be the most important facilitating factor for effective communication. Improved communication can be achieved through well-structured team meetings in which GPs and nurses receive appropriate payment for their attendance, have face-to-face contact and take part in interprofessional training programmes.[11] Little is known about therapists' perspectives: In a nationwide survey in Germany, occupational and physical therapists perceived communication about mutual patients with GPs, outpatient care services and other therapists as too infrequent.[12] Other qualitative studies reveal that GPs have to prioritise whom they want to collaborate with,[13] and that physical therapists as well as GPs considered mutual communication and the receipt of appropriate examination findings to be important.[14] Closer collaboration between physical therapists and GPs can lead to better management of patients with complex problems and prevent unnecessary use of resources by avoiding inappropriate referrals.[15] From the perspective of patients and relatives, proper information transfer between professionals, clear procedures and proactive GPs and nurses were considered essential for good palliative care at home, as shown in an interview study from the Netherlands.[16] In a British interview study, relatives indicated that minimising the number of people involved in caregiving, increasing or ensuring personal continuity, and optimising informational and organisational aspects of caregiving could lead to a more positive experience in palliative care.[17] Finally, a meta-synthesis of qualitative studies identifies successful interprofessional collaboration as a key success factor for safe and person-centred care.[18] Moreover, interdisciplinary collaboration was an important aspect of implementing person-centredness.[19]

While intervention studies in the inpatient care setting suggest the superiority of care provided by a multiprofessional team,[20] or by involving GPs or pharmacists,[21] only few interprofessional concepts exist for the home care setting. In Ontario, Canada, interprofessional 'home-based primary care teams' have been caring for patients in their homes for several years.[22] Members of these teams state that shared goals are essential for their work.

Current projects in Germany are breaking new ground in collaboration between GPs and registered nurses.[23–26] However, none of these projects aim at promoting interprofessional collaboration with other health professionals in home care, actively integrating the perspectives of all persons involved.

The findings above disclose that the field of 'interprofessional collaboration in home care' refers solely to cooperation between only two professional groups and often does not involve those directly concerned, that is, the PRHC and their relatives. So far, there are no studies developing and testing strategies to enhance interprofessional collaboration for person-centred home care while considering the perspectives of all people involved. Existing evidence typically relates to integrated or coordinated care approaches for persons with specific chronic health conditions or in palliative care, but not to routine care for persons receiving home care due to various age-related and disease-related limitations. In *interprof* HOME, PRHC and relatives will have an important role in the development and assessment of interprofessional person-centred care concept.

In person-centred care, a person's values and preferences are elicited and guide all aspects of the individual healthcare in a dynamic relationship between the person, significant others and all relevant healthcare providers.[27] To coordinate this team-based care, it is important to identify a person with primary responsibility for the care plan

and facilitating the communication between providers. In person-centred care, the person is always part of the team.[27] This aligns with 'collaborative healthcare practice', in which multiple healthcare professionals from different professional backgrounds provide comprehensive services by working with the person herself/himself, relatives, providers and communities to deliver the highest quality of care across settings.[28]

Aim of the project

The overall aim of the mixed-methods study is to develop a care concept to improve person-centred interprofessional collaboration for PRHC while systematically considering the perspectives of PRHC themselves, their relatives, nurses of outpatient care services, GPs, occupational therapists, physical therapists, speech therapists and representatives of statutory health insurances.

The specific aims of the work packages (WPs) are:

1. Exploration of the current care situation of PRHC in Germany from the perspective of PRHC, relatives, nurses of outpatient care services, GPs, occupational therapists, physical therapists, speech therapists and representatives of statutory health insurances: Description of the interaction of the persons involved in care, consideration of person-centredness. (WP 1–WP 3)
2. Description of challenges and identification of facilitating factors in the communication and collaboration of those involved in the care of PRHC. (WP 1–WP 3)
3. Exploration and description of 'best practices' of interprofessional collaboration in home care. (WP 4)
4. Development of the interprofessional person-centred care concept and the implementation strategy. (WP 5+WP 6)

We plan to test and implement the developed intervention *interprof* HOME in a later feasibility study and a cluster-randomised controlled trial.

METHODS AND ANALYSIS

Study design and study setting

The mixed-methods study for the *interprof* HOME development is carried out by partners in Northern, Central and Western Germany: Department of General Practice, Medical Center Göttingen; Chair of Organisation and Corporate Development, University of Göttingen; Department of General Practice and Primary Care, University Medical Center Hamburg-Eppendorf; Institute for Social Medicine and Epidemiology, Nursing Research Group, University of Lübeck; Institute of Nursing Science, Medical Faculty and University Hospital Cologne, and the accredited law firm Ruppel, specialised in medical law. Members of the research team have various professional expertise in general practice, nursing science, nursing pedagogics and nursing research, public health, organisation and corporate development as well as medical law and experience as nurse, physiotherapist or occupational therapist. The interprofessional person-centred care concept '*interprof* HOME' will be developed in a multistep mixed-methods approach. The study started in May 2021 and will be funded until late summer 2023. The six WP (WP1–WP6) that constitute the study will be carried out simultaneously or consecutively (see figure 1).

WP1: structured literature review

In this period, the research field will be specified by a structured literature review. Part of the literature review will focus on providers' perceptions of communication and cooperation with each other. Furthermore, we are interested in the view of PRHC and their relatives on cooperation and communication with and between professional providers. Moreover, interventional studies on strategies for promotion of interprofessional collaboration in the outpatient care for PRHC will be reviewed.

WP2: semistructured interviews and monoprofessional focus groups

In interviews with PRHC and relatives of PRHC, the interprofessional healthcare situation of PRHC will be explored. Monoprofessional focus groups with GPs, nurses from outpatient care services, occupational therapists, physical therapists and speech therapists will also cover the working situation. Additionally, barriers and facilitators of interprofessional person-centred care will be discussed, and first ideas for an improved interprofessional healthcare will be collected. In expert interviews, specialists from statutory health/long-term care insurance companies will provide their perspective on home care of PRHC focusing on organisational and political implications.

WP3: survey

In a multicentre survey, PRHC and relatives as well as GPs, nurses and therapists will answer questions concerning previous collaboration in the context of home visits, potentials of collaboration, interface problems and ideas for interventions.

WP4: interviews and observations of best practice cases, shadowings

After recruiting home care constellations who consider themselves as 'best practice cases' regarding interprofessional collaboration, observations of home visits of the involved professionals and interviews with PRHC, a relative or another close caring person (if involved) and the respective involved health professionals will be interviewed. Additionally, nurses of outpatient care services will be shadowed during one working day to better understand the organisation of their daily routine.

WP5: mixed focus groups

Based on a triangulation of the findings from WP1 to WP2, we will conduct focus groups with mixed samples of representatives from all parties involved to outline the components of the interprofessional person-centred care concept.

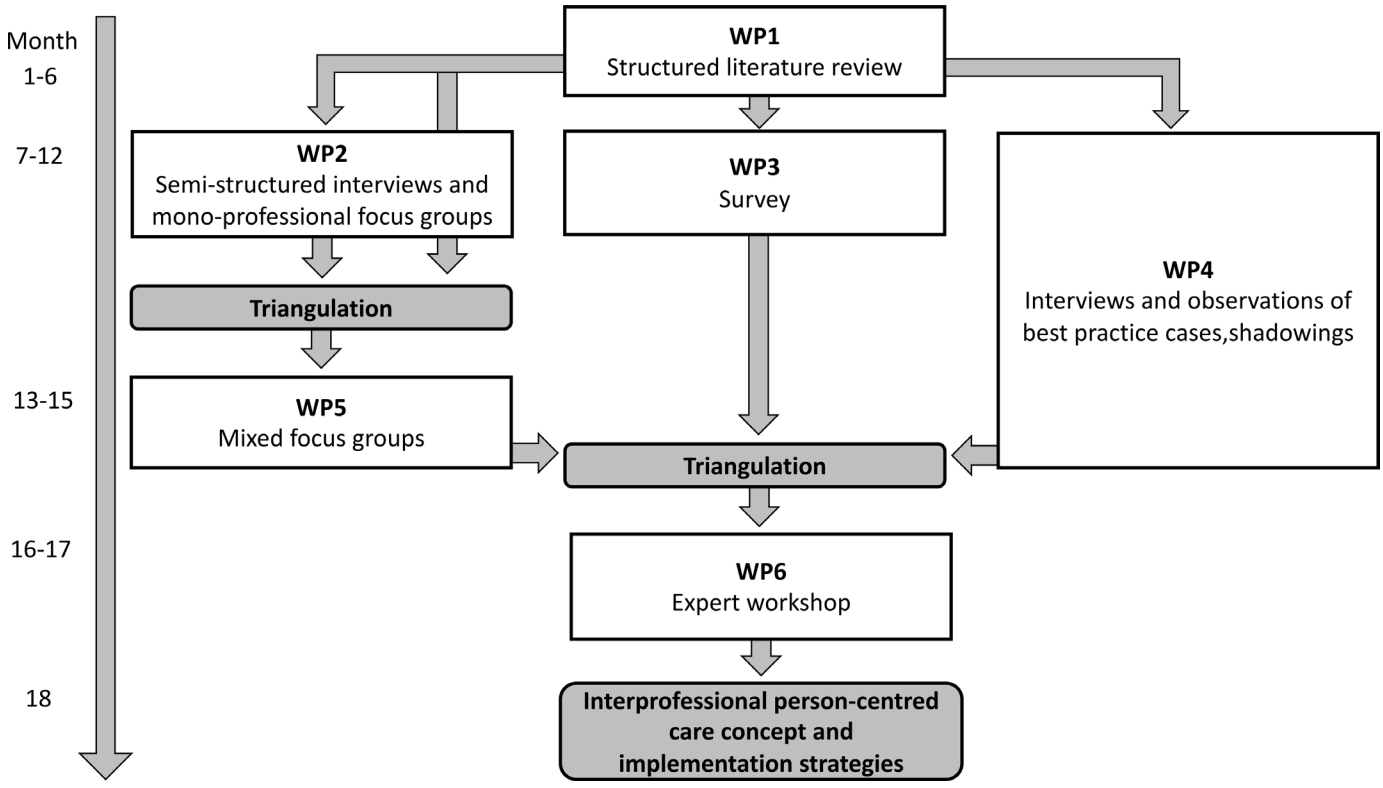

Figure 1 Study design of the mixed-methods study for the interprof HOME development, WP, work package.

WP6: expert workshop

Within a structured 2-day expert workshop, experts of all groups being involved in home care, will discuss, adapt and combine draft components from WP3, WP4 and the mixed focus groups (WP5). They will determine the form of the outpatient interprofessional person-centred care concept and define a strategy for its implementation.

Eligibility and recruitment

Table 1 displays the eligibility criteria for participants of interviews, focus groups and expert workshop (WP2, WP 4, WP 5 and WP 6).

Recruitment of participants will follow the same scheme for WP2, WP4 and WP5: Professionals (nurses of outpatient care services, GPs, occupational therapists, physical therapists and speech therapists) will be identified via local registers in all research centres and invited by letter and later by telephone to participate in the study. PRHC and relatives of PRHC will be recruited by invitation via nurses of outpatient care services, via self-help groups, GPs, occupational therapists, physical therapists or speech therapists. Experts of statutory health/long-term care insurance companies will be approached by email or telephone directly by the researchers.

During the recruitment for interviews and focus groups, a diversity of attributes will be strived for concerning sex, age, region, specialisation (professionals), and social support, co-care by family members, distance to GP's office, density pattern of nursing care services, and individual health situation (PRHC and relatives).

For the survey (WP3), professionals will be identified via local registers and they will be invited by email followed by two reminders. PRHC relatives will be recruited via notices in long-term care support centres, information in newsletters, websites of caring relatives or self-help groups, presentation of the study in meetings of self-help groups.

For WP6, representatives of PRHC and relatives, who have deep expertise in their roles and experts from the fields, nurses, GPs, occupational therapists, physical therapists and speech therapists will be complemented by experts from health insurances, external quality management institutions, health politics, as well as scientific experts from general practice, nursing, therapeutic science, public health and economic sciences. Experts will be invited according to their reputation, after recommendation by the advisory board or based on professional contacts. Researchers contact them by email or telephone.

As questionnaires in WP3 will be mainly answered online, eligibility criteria will be specified as for WP2, WP4 and WP5, but cannot be controlled.

Sample size

In WP2, 20 PRHC and 20 relatives of PRHC will be interviewed across the four research centres to cover a wide range of themes. Five interviews will be conducted with experts from statutory health/long term care insurances. Across all four research centres, three monoprofessional focus groups of around eight participants of

Table 1 Eligibility criteria for participants

Person group (in WP)	Inclusion criteria **besides signature of informed consent**	Exclusion criteria
PRHC (WP2, WP4, WP5)	► Age: 18 years and older ► Receiving care by outpatient care service according to SGB XI ► Living in own home ► Sufficient German language skills	► Disease or disability which makes it impossible to be interviewed ► Living in a nursing home ► No informed consent of legal guardian, if PRHC is not able to give consent
Relatives of PRHC (WP2, WP4, WP5)	► Age: 18 years and older ► Their relative is the person who receives care by an outpatient care service according to SGB XI in her/his own home ► Sufficient German language skills	► Their care-dependent relative lives in a nursing home
Nurses (WP2, WP4, WP5)	► Working as a registered or an assistant nurse in outpatient care service ► Performing home visits ► Sufficient German language skills	
GPs (WP2, WP4, WP5)	► Qualification in family medicine or internal medicine ► Working as a GP ► Performing home visits ► Sufficient German language skills	
Therapists (WP2, WP4, WP5)	► Qualification as physical therapist, occupational therapist or speech therapist ► Performing home visits ► Sufficient German language skills	
Experts statutory health/ nursing insurance (WP2, WP6)	► Employee of a statutory health/long-term care insurance ► Focus on outpatient care ► Sufficient German language skills	
Experts (WP6)	► Age: 18 years and older ► Expert of important field for the study ► Sufficient German language skills	

GPs, general practitioners; PRHC, people receiving home care; SGB XI, Social Code - Book XI - Social Care (Sozialgesetzbuch (SGB) - Elftes Buch (XI) - Soziale Pflegeversicherung); WP, work package.

each professional group will be held (nine focus groups altogether).[29 30] Additionally, one mixed focus group will be conducted in WP5 per research centre (n=4). Each mixed focus group is composed of two PRHC, two relatives, two nurses of an outpatient care service, two GPs and two therapists to integrate the perspective of all persons being involved in outpatient care. According to our experience from previous qualitative research and the literature, saturation should be achieved after 10–20 interviews[31] and 3–6 focus groups per person group.[32]

In WP3, we strive to reach 100 participants per person group (PRHC and relatives, nurses of outpatient care services, GPs and therapists). As there is no valid basis for a sample size calculation and considering the exploratory nature of the survey, we chose a sample size that seems to be both achievable and large enough to perform meaningful analyses.

For WP4, eight PRHC cases will be included, if the involved individuals agree that their case is a best practices case. The number of eight cases allows for both in-depth analysis of individual cases and comparison across cases while taking heterogeneity of the cases into account. Two nurses will be complementarily shadowed.

A best practice case may involve PRHC, relatives, nurses, GP and therapists. If specialised care providers, such as wound experts, are also involved in a case they will also be invited to participate in the study. Cases will also be included if not all of the above-mentioned actors are involved or if not all of them are willing to participate in the study.

Up to 20 experts of around ten subgroups will take part in the expert workshop (WP6) to guarantee that all perspectives are represented, and a constructive discussion will arise.

Interviewees receive a compensation of EUR 50, participants of focus groups EUR 100 and experts in the 2-day workshop EUR 350.

Data collection

Semistructured interviews will be conducted in WP2 and WP4.[33] Focus groups will be used to collect data in WP2 and WP5,[34 35] and an expert workshop takes place in WP6.

The guideline for interviews in WP2 will be developed according to Helfferich[36] and will be based on findings from the literature research. For a better comparability of content and to diminish influence of different interviewers or facilitators, identical topics are included in interview and mono-professional focus group guidelines (WP2): current healthcare situation of PRHC/person-centredness, interaction/collaboration of persons involved in healthcare for PRHC, and ideas for an optimal interprofessional care of PRHC. The guideline for the mixed focus groups (WP5) and the expert workshop (WP6) will base on findings from previous WPs respectively.

Interviewees can choose whether interviews will be held by phone, video or in person, while focus groups and expert workshop will be conducted via video calls (due to pandemic hygiene guidelines). Interviews and focus groups will be audiorecorded; the latter will be logged additionally.

Data of the survey (WP3) will be collected anonymously via the online platform 'SoSci Survey' or via anonymous paper versions by letter. The questionnaire is based on the German Version of the 'Jefferson Scale of Attitudes towards Physician-Nurse Collaboration',[37] a 15-item instrument measuring attitudes or orientation towards interprofessional collaboration. Topics are interprofessional collaboration and relations as well as autonomy of professional groups. For PRHC and relatives, some subscales will be adapted to collect information on PRHCs' perception of interprofessional collaboration. Moreover, some data collection tools from the previous *interprof* ACT study[38] as well as subscales from other validated questionnaires will be used (table 2).

Table 2 Instruments in questionnaire (WP3)

Literature	Instrument	Used subscale
Orchard *et al*[49]	Assessment of Interprofessional Team Collaboration Scale-II	► Partnership ► Cooperation coordination
Anthoine *et al*[50]	Communicating and sharing information	► Sharing of medical information
Reid *et al*[51]	Readiness for Interprofessional Learning Scale	► Teamwork and collaboration ► Patient-centredness ► Sense of professional identity
Ushiro[52]	Nurse-Physician Collaboration Scale	► Joint participation in the cure/care decision-making process ► Sharing of patient information ► Cooperativeness

The questionnaire consists of 56 items, which are mostly statements assessed with 4-point or 5-point Likert scales and questions on basic demographic aspects. The questionnaire is available from the authors on request.

In WP4, interviews will be conducted with persons involved in a case based on a semistructured interview guide. In addition, a researcher will observe home visits of the different professionals in a non-participatory way and log the process in a standardised observer protocol. After the non-participatory observations, the researcher will actively ask questions to catch more information on background or cohesion of actions. Moreover, a researcher will further accompany two nurses during one working day and will make field notes with a focus on organisational issues and nursing professionals' interprofessional interactions (telephone calls, emails, direct contacts). Finally, reports about observations and shadowing will be written.

The expert workshop (WP6) will be audiorecorded, logged and documented. After the expert workshop, the components of the new concept and the implementation strategy will be documented based on established reporting standards.[39] It will be sent to the experts for annotation.

Trained researchers will conduct interviews and observations and facilitate the focus groups and expert workshop. Transcripts of all audiorecordings will be checked again and pseudonymised.

Data analyses

Interviews (WP2) and all focus groups (WP2, WP5) will be analysed by qualitative content analyses.[40]

In WP2, teams of two researchers from different centres will analyse data from one person group (PRHC, relatives, nurses, therapists, GPs, experts from statutory health/long-term care insurance companies). At first, a common deductively developed code system will be used for the analyses of the first interviews. In this period, new codes and subcodes will be developed and integrated. Afterwards, the complete material will be coded again according to the new deductive and inductive code system. All data will be coded by two researchers, either simultaneously or consecutively. In case of discrepancy, a supervisor will be involved, and the code will be discussed until an agreement is reached. In weekly meetings, researchers of all centres will discuss and compare findings. They will create a category system for the data of all person groups.

In WP3, data will be analysed descriptively using the software IBM SPSS Statistics for Window, Version28.0. Exploratory correlation—and regression analyses will be performed in addition, if needed.

In WP4, a case-based qualitative content analysis will be conducted to evaluate interviews, observations and shadowings regarding best practices of interprofessional coordination and exchange of information. The analysis follows the principles of the Gioia approach.[41 42]

In a synthesis, findings from the analyses of WP2's interviews and focus groups will be compared and contrasted with each other. The results will frame the topic guide for the mixed focus groups (WP5).

For combining findings from WP3, WP4 and WP5, we will use joint displays and MAXQDA software.[43] Findings will be arranged in the central topics: current practice, relevant context factors, needs and expectations regarding medical-nursing-therapeutical care of PRHC in the home care setting. The resulting matrix will be assessed for overlapping, complementing or contradictory content. Two study centres will perform the comparison independently. Results of the triangulation will be reflected within the consortium with regard to validity and plausibility.[44] The adapted findings will be summarised in a preliminary logic model for interprofessional person-centred care for PRHC.[45]

This model will build the bases for the expert workshop (WP6), which will be analysed by knowledge mapping.[46]

After the expert workshop, the finally adapted logic model of the healthcare concept as well as the consented strategies for its implementation will be fixed in an intervention protocol.[39] The protocol will be sent to the experts of the workshop for comments. Comments will be integrated, and the new concept will be finalised.

Patient and public involvement statement

Patient representatives, members of self-help groups and professional caregivers will be members of the advisory board. Moreover, the perspective of PRHC and their relatives will be directly integrated into the development of the concept, as their view will be captured in the interviews of WP2 and WP4, in the WP5 mixed focus groups and as experts in the WP6 expert workshop. We will not involve the general public into the study process.

DISCUSSION

By integrating the perspectives and needs of all groups of persons involved in home care for PRHC into the development of the interprofessional person-centred home care concept, acceptance is considered to be higher and implementation more feasible.[47 48] We intend to compose a concept especially serving PRHC with regard to clinical and social outcomes. Additional goals should be a better support of relatives and an amelioration of the interprofessional caring process itself as well as an improved interprofessional collaboration and higher job satisfaction.

The newly developed interprofessional and person-centred care concept '*interprof* HOME' is intended to be piloted with regard to acceptance and feasibility and be consecutively implemented and evaluated with regard to effectiveness. In general, we aim at drawing more attention on the interprofessional home care in Germany and contribute to its improvement by publishing and teaching our results.

ETHICS AND DISSEMINATION

Ethical approval from local Research Ethics Boards was obtained from all institutions involved in data collection and analysis (University Medical Centre Göttingen (35/8/21) Medical Association Hamburg for the University Medical Centre Hamburg-Eppendorf (2021-200203-BO-bet), University of Lübeck (21-410) and University of Cologne (21-1499_1). The study is registered on ClinicalTrials.gov: NCT05149937. If important protocol modification will arise, they will be submitted as an amendment to the ethical boards, the funder will be informed as well as the trial registry and all participants, who are involved.

All study participants will be informed in written and additionally in oral form by a researcher. All participants will sign the informed consent prior to data collection. In case of a legal guardianship of a PRHC, the legal guardian will be informed and can give informed consent in addition to the PRHC. However, PRHC can take part if they are able to give informed consent themselves. If PRHC are not able to consent, a consent of the legal guardian must be collected prior to data collection (if the PRHC meets inclusion and exclusion criteria). Withdrawal from the study is possible at any given point during the study without any negative effects for the participant. Deletion of data of the participant will be possible until the end of the study (pseudonymisation), afterwards data will be anonymised, and a tracking of data will not be possible anymore.

At the end of the study, we will publish findings about the perspectives of the different person groups on interprofessional care and the development of the interprofessional person-centred care concept in peer-reviewed scientific journals as well as present them at scientific conferences. Moreover, we will include results into education of medical, nursing and therapeutic students as well as vocational training of professionals—ideally in interprofessional sessions.

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Contributors CAM, BT, KB, EH, TF, H-HK, AK, SK, IM, CEW, LS, MS, AM and TR conceived the study design in a collaborative manner. All authors substantially contribute to the implementation of the study and give relevant intellectual input. BT and CAM wrote the manuscript. All authors revised the manuscript critically for important intellectual content and agreed on the final version.

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