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Mapping care trajectories for hospital-initiated benzodiazepine deprescribing in older adults: a multicentre qualitative study

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Abstract

Background Long-term prescription of benzodiazepine receptor agonists (BZRAs) for insomnia in adults over 65 years of age is considered a low-value care practice. Although deprescribing has emerged as a possible solution, the implementation of BZRA deprescribing has been considered insufficient in routine clinical care. Mapping care trajectories relative to BZRA deprescribing can help identify inefficiencies in current care and propose strategies to enhance the implementation of deprescribing interventions in the long term. This study aims to map care trajectories and characterise contextual factors relevant to hospital-initiated BZRA deprescribing in older adults.

Methods A qualitative study was conducted with local researchers, healthcare professionals (HCPs), patients, and informal carers in six European countries (Belgium, Greece, Norway, Poland, Spain, and Switzerland). Three theoretical frameworks were used to guide data collection and analyses: 1) the '6W' multidimensional model of care trajectories; 2) the patient-centred deprescribing process; and 3) the Context and Capabilities for Integrating Care framework. Data was collected online through self-administered questionnaires, individual interviews, and group validation interviews. Data were transcribed verbatim and analysed using a combination of deductive and inductive thematic analyses.

Results We collected 18 responses to surveys, and conducted 53 interviews (6 local researchers, 36 HCPs, 11 patients or informal carers) and 7 group interviews (comprising 28 HCPs, 4 patients). We developed nine validated care trajectory maps by hospital department and type of unit, and two general comparative maps for inpatient and outpatient care. Hospital-initiated BZRA deprescribing emerged as a complex healthcare process that is likely to involve several HCPs from hospital and primary care. Participants considered patient involvement in shared decision-making (SDM) to be crucial in deprescribing, but implementation was scarce in routine care. The type of HCPs involved and the communication channels between them were specific to each country. Fragmented care and poor communication in the care trajectory hindered follow-up and continuity of care.

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Conclusions Deprescribing interventions should include context-sensitive strategies to promote patient participation in SDM, foster the use of guidelines, and enhance interprofessional collaboration along the care trajectory. Care trajectory maps can be used as an implementation tool to translate BZRA deprescribing interventions into routine practice.

Keywords Delivery of healthcare, Care trajectory, Benzodiazepines, Deprescribing, Elderly, Inappropriate prescriptions, Shared decision making, Quality of health care

Background

The use of benzodiazepine receptor agonists (BZRAs – benzodiazepines and z drugs) has been associated with an unfavourable risk–benefit ratio, particularly among adults over 65 years of age [1], due to an increased risk of falls, hip fractures, impaired cognitive function, and higher use of healthcare resources [2–5]. Therefore, long-term prescription of BZRAs for insomnia in older adults (i.e., adults over 65 years of age) is considered a low-value care practice [6, 7]. Guidelines recommend not using BZRAs to treat insomnia in older adults for more than two weeks [8]. Instead, Cognitive Behavioural Therapy for Insomnia (CBT-I) is recommended as the first-line treatment for insomnia in the adult population, including older adults [9–11]. Nevertheless, long-term BZRA prescriptions remain common among older adults in Europe. A study in seven European countries found that 14.9% of community-dwelling older adults were prescribed BZRAs, with 70.7% of prescriptions lasting over a year [12]. BZRA prevalence among hospitalised older adults has been found to be even higher [13], with BZRA being the most frequent potentially inappropriate prescription (PIP) identified in hospitalised older patients [14].

In this context, deprescribing has emerged as a possible solution to reduce inappropriate BZRAs prescriptions and to promote value-based healthcare [15]. Deprescribing has been defined as the process of reducing or stopping medications whose potential harms outweigh the potential benefits, considering the patient's care goals, values, and preferences [16]. However, the literature reports that deprescribing BZRAs is challenging due to patient, healthcare professional (HCP), and system barriers [17, 18]. Deprescribing interventions are considered complex health interventions, as they involve multiple interacting components and aim to modify the behaviour of several actors [19, 20]. According to the Medical Research Council framework for developing and evaluating complex health interventions, context is a core element that needs to be assessed to enhance intervention implementation and effectiveness [21]. However, context beyond individual barriers and facilitators has scarcely been studied in deprescribing research [22]. Thus, the literature highlights a need to better understand the context in order to enhance the implementation of deprescribing interventions in real-world settings, which remains limited [23, 24].

Context, here defined as the healthcare system in which an intervention is implemented, can be described by placing patients' care trajectories at the centre of analysis [25]. Care trajectories, also known as "care pathways", have been defined as the sequence of care and treatments that a specific group of patients will experience over time [26]. Care trajectories may involve multiple healthcare settings and episodes of care, such as an acute inpatient stay followed by a consultation with a general practitioner (GP). Furthermore, care trajectories are embedded in healthcare systems with given organisational factors. Care trajectory description can provide insights into the current provision of care and may help identify inefficiencies and unnecessary care variations that hinder the provision of value-based healthcare [27].

Recent literature reviews have recommended deprescribing interventions to integrate a multidisciplinary approach and promote interprofessional collaboration [28–30]. Yet the lack of clarity in the distribution of HCPs' tasks and responsibilities regarding deprescribing could hinder such collaboration [23, 28]. Coordination of care between hospitals and primary care has been argued to be a central condition for providing patient-centred care in hospital-initiated BZRA deprescribing [31, 32]. However, care transitions have received limited attention in previous deprescribing research [31]. Mapping care trajectories may help in coordinating the care process by integrating the roles and sequencing the activities of HCPs across care settings [32]. Patient involvement in shared-decision making (SDM) has also been considered key to the success of deprescribing [33, 34]. Overall, the description of care trajectories can shed light on the current practices related to SDM and help tailor deprescribing interventions to specific contexts [35].

The present study is part of the BE-SAFE project (https://besafe-horizon.eu/), which aims to enhance patient safety by addressing knowledge and practice gaps in the use of BZRAs to treat insomnia in older adults. The BE-SAFE project includes the development and evaluation of an evidence-based intervention to start BZRA deprescribing in inpatient and outpatient units of hospitals in six European countries. This study aims to map care trajectories relative to hospital-initiated BZRA deprescribing in older adults and to characterise

the contextual factors of the healthcare organisations in which those care trajectories unfold.

Methods

Study design

A multicentre qualitative study was conducted in hospital departments and primary care. Primary care was expected to play a role in the care trajectory for hospital-initiated BZRA deprescribing [36] and, therefore, was included in this study. An ethics committee in each country granted or waived approval for this study, as appropriate (see the "*Ethics approval and consent to participate*" section). This study was conducted and reported according to the guidelines of the Consolidated Criteria for Reporting Qualitative Research (COREQ) [37].

Theoretical frameworks

Three theoretical frameworks were used to guide data collection and analysis: 1) the '6W' model of care trajectories [26]; 2) the patient-centred deprescribing process [34]; and 3) the Context and Capabilities for Integrating Care (CCIC) framework [38].

The 6W model of care trajectories proposes six dimensions that can be used to describe patterns of care across healthcare organisations over time [26]. The six dimensions are: 1) "who", the group of patients with their demographic, clinical, and social attributes; 2) "why", the medical reasons for admission or consultation; 3) "which", the HCPs with whom patients interact along the care trajectory; 4) "where", the multiple healthcare settings through which patients transit; 5) "what", the type of care provided to patients; and 6) "when", the sequential order of events in a temporal dimension [26]. Overall, this model outlines the constituent elements of the care trajectories that we sought to map in this study.

The "what" dimension (i.e., the type of care provided to patients) of the 6W model of care was complemented with the patient-centred deprescribing process [34]. This helped to break down the type of care provided in relation to deprescribing into sequential stages, a practice that has been recommended for mapping care processes [39]. The patient-centred deprescribing model consists of five steps to guide deprescribing: Step 1) Complete a medication history; Step 2) Identify PIPs; Step 3) Determine whether the medication can be ceased and prioritisation; Step 4) Plan and initiate medication withdrawal; Step 5) Monitor, support, and document [34]. The patient-centred deprescribing process provided an evidence-based model of the deprescribing process against which to compare the current activities performed by HCPs along the care trajectories. The model was adapted to tailor it to BZRA deprescribing. For example, Step 2 was formulated as "Identify potentially inappropriate BZRA" and patient involvement in SDM was explicitly mentioned in Step 3 and reformulated as "Determine whether BZRA can be ceased, involving the patient in the decision".

Additionally, the CCIC framework was used to describe the (inter-)organisational factors of healthcare settings where care trajectories unfold. The CCIC framework was developed to describe the organisational factors and capabilities of healthcare organisations to implement quality improvement interventions, and consists of eighteen contextual factors across three dimensions: "Basic Structures", "People and Values", and "Key Processes" [38]. We considered the CCIC framework appropriate to characterise the organisational factors that may influence the implementation of a quality improvement initiative, such as a deprescribing intervention.

Study sites

This study was conducted in six countries: Belgium, Greece, Poland, Norway, Spain, and Switzerland. The estimated BZRA use in these countries and some general characteristics of the healthcare systems are presented in Table 1. Information about the hospitals involved in this study is included in the results section.

Participant recruitment

Participants comprised local researchers, HCPs, patients, and informal carers.

Local researchers were part of the research team of BE-SAFE and co-authors of this study. BE-SAFE researchers were experts in deprescribing, geriatrics, or insomnia. In this study, they acted as key informants, as they had expertise in BZRA deprescribing and knowledge of their country's healthcare systems and organisations. Local researchers recruited HCPs and patients.

Eligible HCPs had to work in the hospital departments under study or in primary care, have clinical experience in deprescribing BZRA, and speak English, French, or Spanish (in order to participate in the interviews). We sought to interview HCPs from different disciplines – e.g., physicians, nurses, and clinical pharmacists – for each care trajectory. The HCP profile types per care trajectory were purposefully sought based on the results of previous interviews. Additionally, as recommended by Evans et al. [43], we interviewed at least one HCP with a managerial role in the healthcare organisation (e.g., head of department). Primary care HCPs had to practise in the same region as where the participating hospitals were located; this means they could have treated patients who had also been seen at the hospital.

Local researchers invited patients to participate in the study if they met the following criteria: over 65 years of age; taking BZRA for sleep problems on average three times a week or more during the last three months, or having recently experienced BZRA deprescribing; and

Table 1 Characteristics of the healthcare systems of countries where this study was conducted

Country	DDD for BZRA per 1,000 inhabitants*	BZRA reimbursement	GPs as gatekeepers**	Primary care system characteristics **	Type of healthcare system***
Belgium	103.30	No	No	Mostly self-employed GPs working in independent solo practices. Group GP practices are gaining popularity.	Compulsory health insurance
Greece	44.94	Yes	No	A mix of public and private family doctors. The primary care system is not fully developed. Not all of the population has access to a GP.	National health system
Norway	44.43	No	Yes	Mostly GP practices of various GPs and auxiliary personnel. Home care nursing services are offered several times a day.	Partly decentralised health system
Poland	21.81	No	Partial (e.g., no need for a referral to psychiatry)	Mostly self-employed GPs working in group GP practices. Home visits by physicians or nurses can be provided in medically justified situations.	Social health insurance (National Health Fund)
Spain	88.50	Partial	Yes	Multidisciplinary teams with GPs, nurses, and social workers working in the same practice. Primary care teams can provide home care if needed. Clinical pharmacists also work in primary care.	National health system
Switzerland	35.46	Yes	No	Mostly self-employed GPs working in independent single or group practices. Group GP practices are gaining popularity.	Compulsory health insurance

* Defined Daily Doses (DDD) per 1,000 inhabitants per day in 2018, as calculated by Ma TT et al. [40]. **If GPs act as 'gatekeepers', this means that patients need a referral from a GP to access specialised care. The gatekeeping position of GPs has been associated with stronger primary care and better care coordination [41]. Information collected from the Country Health Profiles [42] and the Country Reports on Primary Care [41] of the European Observatory of Health Systems and Policies, with the input of the research team. *** As defined in the Country Health Profiles [42] of the European Observatory of Health Systems and Policies

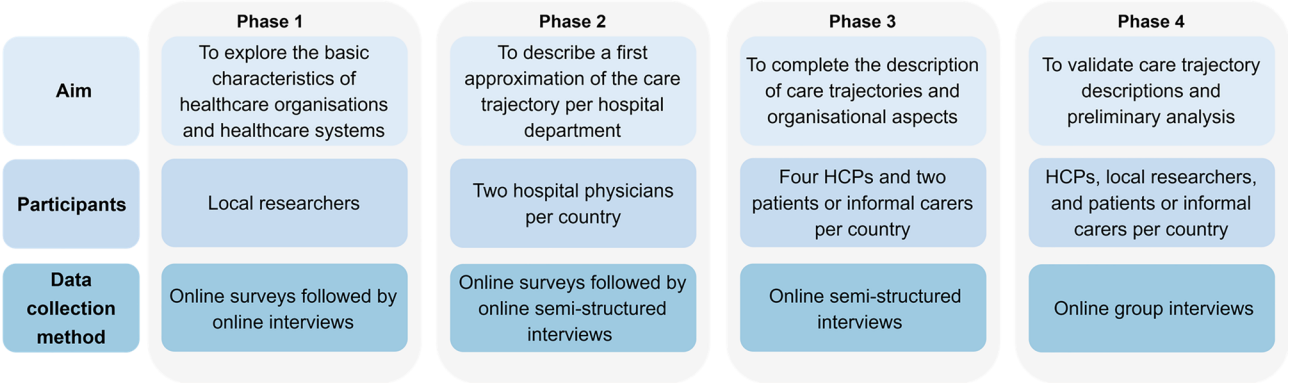


Fig. 1 Phases of data collection for mapping care trajectories and its contextual factors

having received care in the hospital departments under study in the previous 12 months. Exclusion criteria for patients were: having a contraindication for BZRA deprescribing (e.g., alcohol withdrawal) or receiving palliative care. In the case of patients with cognitive impairment or other conditions that prevented the patient from providing consent or actively participating in the interview, an informal carer was asked to participate in the interview. Informal carers could also participate alongside the patient in the interview if the patient wished.

Participants were approached by local researchers, and those who expressed an interest in the study received a participant information sheet and a consent form when needed (a consent form was not needed for interviewing HCPs in some countries). If participants consented, they were invited to participate in scheduled interviews. Participation was voluntary, and a voucher or a financial incentive of between 35€ and 70€ was offered to some participants in some countries. All patients or informal carers, and some HCPs, depending on the country's regulations, signed and returned an informed consent form before they participated in the interview. All participants had the opportunity to ask researchers any questions they had.

Data collection

Data collection was structured in four phases that took place sequentially in each country from September 2022 to February 2024 (Fig. 1).

Phase 1 aimed to explore healthcare organisations and healthcare systems in each country. To do so, we designed an ad-hoc online survey using Qualtrics version 09.22. The survey covered the categories of "Physical features", "Resources and capacity", and "Organisational design" of the CCIC framework. Under the category of "Physical features", we collected information on the size, founding year, and location of the healthcare organisation as well as the hospital departments where the BE-SAFE intervention could be implemented. We also asked if the healthcare organisation was a single or multisite entity. In relation to the category of "Resources and capacity", we inquired about the types of HCPs working in the healthcare organisations and departments, as well as the scope of services offered. Regarding "Organisational design", we asked about formal agreements with other healthcare organisations (e.g., between hospital and primary care). Local researchers were asked to complete the survey before participating in an online interview, during which their survey responses were clarified. Phase 1 also involved selecting the hospital departments to be studied.

In **Phase 2**, two hospital physicians per country were asked to describe a typical care trajectory relative to BZRA deprescribing in their context. To facilitate this, an ad-hoc online survey was designed following the 6W multidimensional model of care trajectories, using Qualtrics. Physicians were asked to complete the online survey and then invited to participate in an online semi-structured interview. A topic guide template for online semi-structured interviews was designed based on the 6W multidimensional model of care trajectories, the patient-centred deprescribing process, and the "Basic structures" and "Key processes" dimensions of the CCIC framework (Supplementary Material 1 and summarised in Table 2). The online survey and the topic guide were piloted with two physicians from Belgium before starting field data collection. Physicians' answers to the online survey were used to draw a first outline of the care trajectory on the website Mural.co [44] and preliminary care trajectory maps were displayed during the interviews to elicit participants' responses [45]. Topic guides were tailored to physicians' answers to the online survey and to the healthcare organisations where they were working, and complemented the visual representation of the care trajectory. During interviews, physicians were also asked to select the most relevant actors in the process of BZRA deprescribing in their context (Table 2) [46]. This helped to identify potential actors involved in the care trajectories in each context and discuss their potential role. At the end of the interviews, physicians were asked about opportunities for improvement in the process of BZRA deprescribing (Table 2).

In **Phase 3**, we interviewed three to five HCPs and one or two patients or informal carers per country to complete the initial description of care trajectories that resulted from Phases 1 and 2. HCP disciplines were selected based on data collected in previous phases. The interview structure was the same as that used with hospital physicians (Table 2). A graphic representation of the care trajectory, integrating the results of previous phases, was used during the HCP interviews. The topic guide was tailored to each HCP profile and healthcare organisation. A specific topic guide covering all dimensions of the CCIC framework was developed for interviews with managers. A specific topic guide was also designed for patient interviews (Supplementary Material 2), which included the analysis of actors; however, the graphical representation of the care trajectory was not used in patient interviews. This was done so as not to increase the complexity of the interview for the patient or informal carer. Nevertheless, the topic guide for patient interviews followed the structure of the care trajectory and was piloted with two patients in Belgium before starting data collection.

The online surveys, topic guides, and preliminary graphic visualisation of the care trajectories used for data collection are available on the Open Science Framework platform (https://osf.io/b9qn8/files/osfstorage).

In **Phase 4**, online group interviews were organised with HCPs and local researchers in each country to validate the care trajectory maps and preliminary analysis of the qualitative data. All HCPs who participated in individual interviews were invited to take part in the group validation interview in their country. When an HCP was not available, another HCP with the same profile was invited to participate in the group interview. A face-to-face group interview was carried out with members of the Patient Partnership Advisory Council (PAC) of the BE-SAFE project in Belgium. The PAC is composed of patients, patient representatives, and informal carers with experience in BZRA deprescribing; patients who had participated in interviews in Belgium were also invited to take part. During group interviews, two researchers (MLT and JM) presented the care trajectory maps and a preliminary analysis of the main contextual factors and moderated a discussion around the following questions: 1) Does what we have presented correspond to your view?; 2) Is there something missing or that you would add?; 3) Have we presented something that you do not agree with?

All interviews were conducted by one researcher trained in qualitative research (MLT). A senior researcher with experience in qualitative research (JM) participated in most of the interviews to ensure the quality of data collection. Interviews were conducted in English, French, or Spanish. When participants did not feel comfortable responding in any of these languages, a local researcher acted as a translator. Individual interviews lasted on average 60 minutes, and group interviews 70 minutes.

Table 2 Structure of the interviews with HCPs (Phases 2 and 3)

Part 1. Description of care trajectory with visual representation

5 steps of deprescribing	6W/CCIC dimensions	Example of questions
Medication history (as one example)	Which (type of HCPs involved)	Who does the medication history?
	What (type of care delivered)	How do you do the medication history?
	When (temporal dimension)	When is the medication history done? What is the average length of hospitalisation/consultation?
	CCIC – Basic structures (IT use)	Is there a shared electronic prescription system that you can check?

Part 2. Analysis of actors

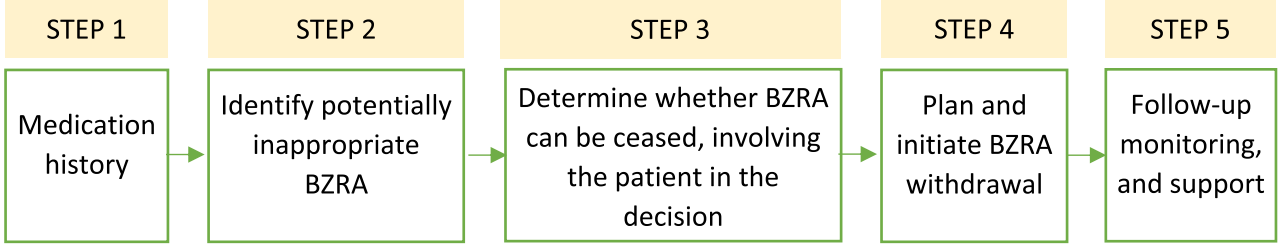
- Here is a list of actors who may have a role in the process of deprescribing in your context. Could you think of any important actor missing from the list?
- Could you select the most important actors for BZRA deprescribing in your context? Please, explain why you selected these actors.

List of possible actors

Hospital attending physicians	The patient
Hospital resident physicians	Family or informal carers
Hospital nurses	GPs or family doctors
Psychologists	Community nurses
Psychiatrists	Physicians at a rehabilitation centre
Community pharmacists	Occupational therapists
Hospital pharmacists	Social workers
Physiotherapists	Other

Part 3. Opportunities for improvement

Deprescribing process



- What do you think is working well in your context?
- What do you think could be improved in your context?
- Which step do you consider key to success?

All interviews were audio-recorded and transcribed verbatim (MLT, TRA). Transcripts were anonymised to guarantee confidentiality, and texts were verified twice against the audio (MLT) to ensure accuracy of transcription. Transcripts of the interviews that were conducted with in-person translation were reviewed against the audio by the local researchers who acted as translators during the interviews, and completed if needed (EC, VT, MK, LB). After Phase 3, the research team considered that data saturation had been reached at the level of hospital departments, and this was confirmed in group interviews, as little new information was collected [47].

Data analysis

An iterative preliminary analysis of the transcripts was carried out in parallel with the data collection process (Fig. 2). Thus, a preliminary analysis of the interviews conducted in previous phases was used to develop preliminary care trajectory maps that were presented and completed in subsequent interviews. After each interview, we amended the care trajectory map and added new information. Transcripts of group interviews were also added to the data set and integrated into the final analysis.

Transcripts of individual and group interviews were analysed following a combination of deductive and inductive thematic analysis [48]. Two researchers (MLT, JM) were involved in the analysis. First, we developed an

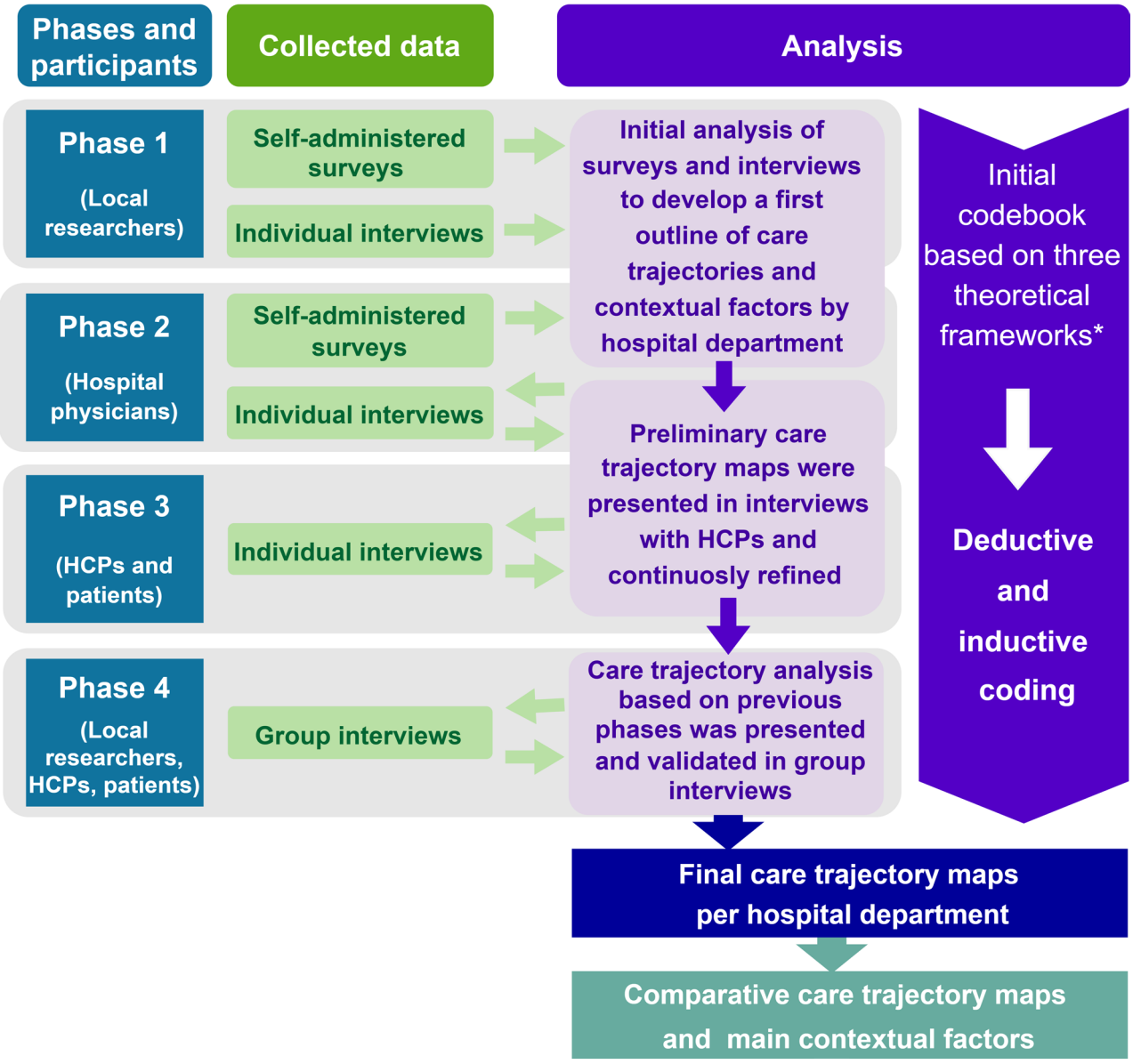


Fig. 2 Illustration of the data analysis used to map care trajectories and characterise contextual factors. *The three theoretical frameworks were: 1) The 6 W model of care trajectories [26], 2) The patient-centred deprescribing process [34], 3) The context and capabilities for integrating care framework [38]

initial codebook based on the three theoretical frameworks mentioned above. During the process of analysis, new codes were added inductively to the initial codebook. Two researchers (MLT, JM) coded 10% of the interviews independently and compared them afterwards; divergences in coding were discussed until consensus was reached. The rest of the interviews were coded by one researcher (MLT), who discussed new codes with the other researcher (JM) when they emerged. Care trajectory maps were developed by one researcher (MLT) based on the analysis of all the data collected for each care trajectory. All care trajectory maps were revised by the other researcher (JM) and validated in Phase 4 by local researchers, HCPs, and the PAC in Belgium. Final care trajectory maps were developed using the software draw.io [49] based on Unified Modelling Language (UML), a widely used notation system to represent processes in healthcare [50, 51]. After mapping and validating each care trajectory, two researchers (MLT, JM) compared the nine care trajectories and generated one overall map for inpatient care and one overall map for outpatient care. One researcher (MLT) identified the main contextual factors across settings by each step of the patient-centred deprescribing process and selected illustrative quotes. This was discussed with the other researcher (JM) until consensus was reached. Local researchers from each country included in the research team validated the comparative analysis. All transcripts

Table 3 Healthcare organisations and departments selected for this study

Country	Type of healthcare organisation	Size (number of beds)	Departments	Type of units
Belgium	Private not-for-profit organisation	300	Pneumology	Inpatient and outpatient
			Geriatrics	Outpatient
Greece	Public hospital	900	Internal Medicine	Inpatient
Norway	Public hospital	1800	Geriatrics	Outpatient
	Public hospital	530	Geriatrics	Inpatient
Poland	Public medical institute	400	Neurology and Psychiatry	Outpatient
Spain	Public healthcare organisation	210	Geriatrics and Intermediate Care Centre*	Inpatient
	Public hospital	810	Geriatrics	Outpatient
Switzerland	Public hospital	900	General Internal Medicine	Inpatient

* The intermediate care centre is a healthcare facility that provides short-term care (average length of stay between 15 and 35 days, depending on the ward) after a hospital stay or illness. It supports individuals who need temporary assistance or rehabilitation to regain their independence before returning home

and survey responses were uploaded to the software NVIVO version 14.23, which was used to support data management and analysis.

Results

Table 3 lists the nine hospital departments, where the BE-SAFE intervention would be implemented, that were selected for care trajectory descriptions. Table 4 details the number and type of participants and data collection method used in each phase. In total, we collected 18 completed online surveys, conducted 53 online semi-structured interviews (6 local researchers, 36 HCPs, 11 patients or informal carers), and 7 group interviews (comprising 28 HCPs, 4 patients). The number and type of participants per country are included in Supplementary Material 3. Participants' sociodemographic characteristics are available in Supplementary Material 4.

Care trajectory maps relative to BZRA deprescribing

We mapped nine care trajectories, one for each hospital department and type of unit (Table 3). Five of the care trajectories went through inpatient units and four through outpatient units (Table 3). Care trajectory maps took into account referral patterns described by the participants. Therefore, one of the care trajectories through the inpatient unit also included the outpatient unit of the same department (Pneumology, Belgium), one inpatient care trajectory included an intermediate care centre (Geriatrics, Spain), and two outpatient care trajectories included sleep clinics (Pneumology, Belgium and Neurology, Poland). The nine validated care trajectory maps can be found in Supplementary Material 5. General comparative maps for inpatient and outpatient care are depicted in Figs. 3 and 4, respectively, and show the main similarities and differences among the care trajectories described. The maps also show the main healthcare settings through which the care trajectory unfolds ("where" dimension of the 6W model of care). The vertical columns represent the main actors involved in each setting ("which" and "who" dimensions). Activities related to BZRA deprescribing currently undertaken are included in rounded blocks in the column of the actor performing each activity ("what" dimension). Interprofessional communication activities are highlighted with a dashed border. The five steps of the patient-centred deprescribing process are displayed in rows. The time dimension is shown from top to bottom ("when" dimension), with the different healthcare settings through which the patient transits presented horizontally. Some dimensions of the CCIC framework have also been included in the care trajectory maps, such as "Referral patterns", "Guidelines and protocols", and "Information Technology". The care trajectories described are not exclusive; therefore, others may exist (e.g., a care trajectory for BZRA deprescribing in the community without hospitalisation).

Main contextual factors by step of the patient-centred deprescribing process

By describing care trajectories, we found that, currently, BZRA deprescribing is not frequently initiated in the hospital, except in geriatric departments and sleep

Table 4 Participants and data collected in the four phases of this study

	Phase 1	Phase 2	Phase 3		Phase 4	
Participants	**6 local researchers**	**12 hospital physicians**	**24 HCPs (hospital physicians, GPs, hospital nurses, psychologists, managers, clinical pharmacists)**	**11 patients or informal carers**	**28 HCPs* (hospital physicians, GPs, hospital nurses, managers, clinical pharmacists)**	**4 patients/ informal carers****
Data collection	6 survey responses; 6 interviews	12 survey responses; 12 semi-structured interviews	35 semi-structured interviews		6 online group validation interviews	1 face-to-face group validation interview

* 10 out of 28 HCPs had not participated in previous interviews. ** None had participated in previous interviews

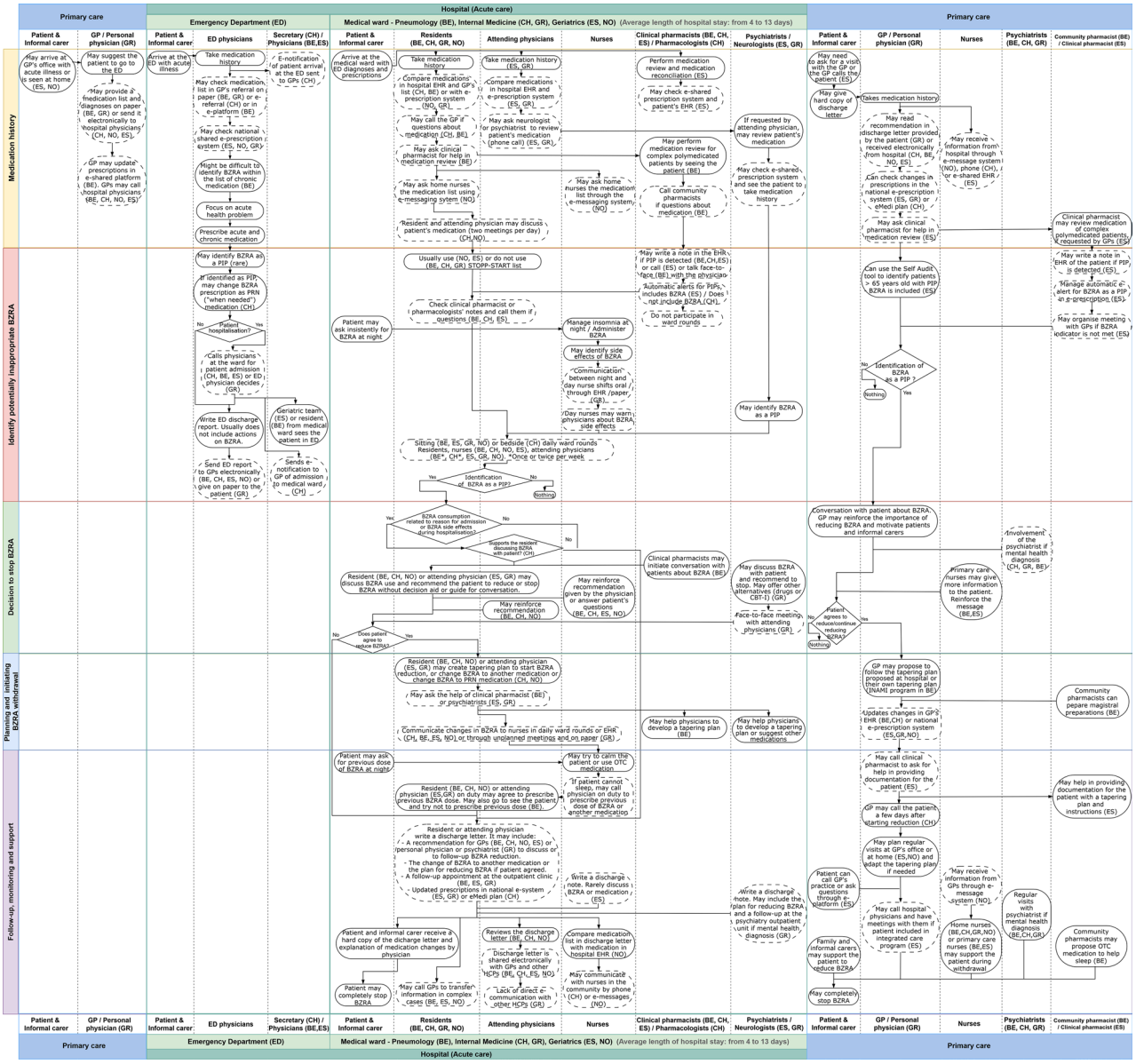


Fig. 3 Inpatient care trajectory map for BZRA deprescribing. Rounded blocks include activities related to BZRA deprescribing currently undertaken; rounded blocks with a dashed border show interprofessional communication activities; diamonds represent a decision point from which alternative paths emerge for "Yes" or "No" decisions. Two-letter country codes indicate differences found in care trajectories, in no case do they refer to the whole country; country codes near the name of the healthcare professional (HCP) mean that this type of HCP was only present in some care trajectories; country codes inside a rounded block mean that this type of activity was only found in some care trajectories. The map should be read from top to bottom, and then from left to right. Country codes: BE: Belgium; CH: Switzerland; ES: Spain; GR: Greece; NO: Norway; PL: Poland.Acronyms in the figure: CBT-I: cognitive behavioural therapy for insomnia; ED: Emergency Department; EHR: electronic health record; eMedi plan: new medication plan in Switzerland [52]; GP: General practitioner; INAMI program: new community program for tapering BZRA in Belgium launched by the INAMI ("institut national d'assurance maladie-invalidité") [53]; OTC: over-the-counter medication; PIP: potentially inappropriate prescription; PRN: 'Pro re nata' medication (i.e., only when needed); Self Audit tool: electronic decision-making tool to support GPs in reviewing medication [54]; STOPP-START list: STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment) criteria [55]

clinics. When BZRA deprescribing is initiated in the department, it is unlikely that the entire process will take place in the hospital; in most cases, the follow-up would be performed in primary care, both for inpatient and outpatient units. Moreover, in the follow-up at the community level, all five steps for deprescribing may occur. Therefore, the same deprescribing step could take place in different healthcare organisations, and different HCPs can contribute to each step. For instance, Step 3 (Determine whether BZRA can be ceased, involving the patient in the decision) can be initiated in the hospital, but continued in primary care, as patients may want to

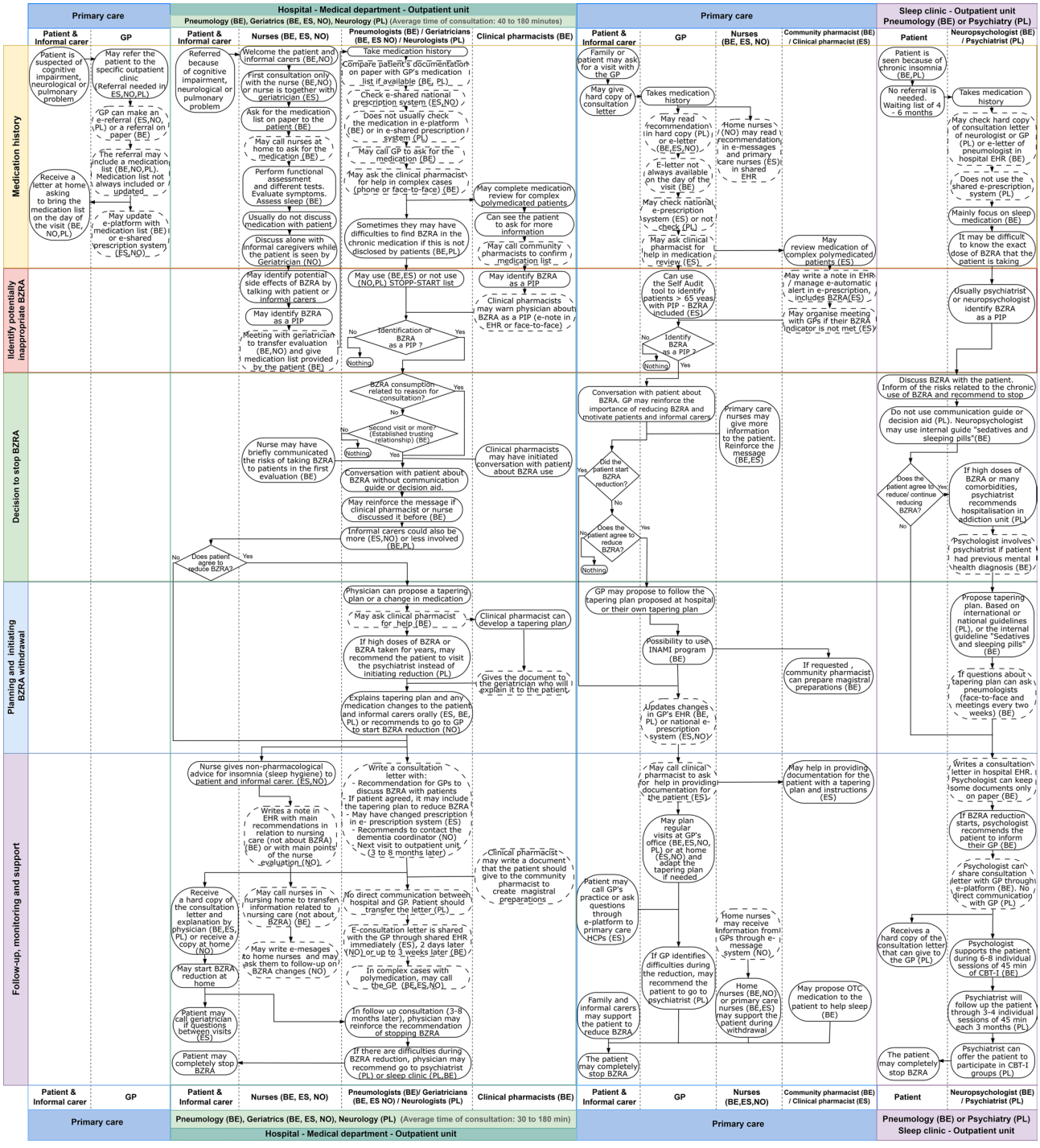


Fig. 4 Outpatient care trajectory map for BZRA deprescribing. Rounded blocks include activities related to BZRA deprescribing currently undertaken; rounded blocks with a dashed border show interprofessional communication activities; diamonds represent a decision point from which alternative paths emerge for "Yes" or "No" decisions. Two-letter country codes indicate differences found in care trajectories, in no case do they refer to the whole country; country codes near the name of the healthcare professional (HCP) mean that this type of HCP was only present in some care trajectories; country codes inside a rounded block mean that this type of activity was only found in some care trajectories. The map should be read from top to bottom, and then from left to right. Country codes: BE: Belgium; CH: Switzerland; ES: Spain; GR: Greece; NO: Norway; PL: Poland. Acronyms in the figure: CBT-I: cognitive behavioural therapy for insomnia; E: Emergency Department; EHR: electronic health record; eMedi plan: new medication plan in Switzerland [52]; GP: General practitioner; INAMI program: new community program for tapering BZRA in Belgium launched by the INAMI ("institut national d'assurance maladie-invalidité") [53]; OTC: over-the-counter medication; PIP: potentially inappropriate prescription; PRN: 'Pro re nata' medication (i.e., only when needed); Self Audit tool: electronic decision-making tool to support GPs in reviewing medication [54]; STOPP-START list: STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment) criteria [55]

involve their GP in the decision. We also found that the steps may not always be applied in a sequential order. For example, there might be backwards loops from Step 4 (Plan and initiate BZRA withdrawal) to Step 3, as the decision to stop BZRA medication could be revisited based on the patient's preferences or the appearance of intercurrent health issues during BZRA withdrawal.

The main contextual factors identified in each step of the patient-centred deprescribing process are synthesised in Table 5 and are also included in general and specific maps. The main bottlenecks identified across settings were the implementation of SDM (Step 3), non-use of clinical guidelines (Step 4), and the provision of follow-up after discharge (Step 5). Most of the interviewed HCPs agreed that mainly Step 1 (Medication history) and Step 2 (Identification of BZRA as a PIP) are implemented in the hospital departments. Step 3 is mainly performed when the reason for admission or consultation is related to the consumption of BZRA, or if BZRA side effects are observed during hospitalisation. This was also supported by patient interviews, as most patients had not received information about BZRA deprescribing from hospital HCPs. In addition, when Step 3 is implemented, it does not always include the involvement of the

Table 5 Main contextual factors identified in each step of the patient-centred deprescribing process. Two-letter country codes refer to the described care trajectories

Deprescribing process	Main contextual factors identified	Illustrative interview quotes
Step 1. Medication history	• Lack of shared EHR (BE, CH, GR, NO, PL) or a user-friendly shared electronic prescription system (BE, CH, PL) between primary and hospital care may hinder or slow medication history. • It may be difficult for hospital physicians to identify BZRA in chronic medication or to know the exact dose (BE, CH, PL) *(Q1, Q2, Q3)*. • Clinical pharmacists may help in completing a comprehensive medication history (BE, ES). • Nurses are rarely involved in the medication history.	*(Q1) "Sometimes there is a problem because our patients are at the psychiatrist too. Then the psychiatrist normally makes the [BZRA] prescription […] and it's hard to find out because the prescription is not included in my plan."* (GP, CH) *(Q2) "Patients tell us about it. We don't have any records or any documents, and we must believe our patient, and it's sometimes not true, because they said that they take 3 tablets of Zolpidem, for example, and we see that it's more."* (Psychiatrist, PL) *(Q3) "When I went to the [hospital] doctor, I never said I was taking sleeping pills."* (Patient, BE)
Step 2. Identify potentially inappropriate BZRA	• Some HCPs and patients may minimise health risks associated with BZRA. For instance, HCPs may consider short half-life BZRAs appropriate for older adults *(Q4, Q5)*. • Geriatricians, psychiatrists, pharmacists, and sleep clinic psychologists are better trained to identify BZRA as a PIP *(Q6)*. • Hospital HCPs usually do not use lists of PIPs (e.g. STOPP/START criteria), except geriatricians and pharmacists. • Automatic electronic alerts or e-notes managed by pharmacologists or clinical pharmacists may help in identifying BZRA as a PIP (BE, ES, CH). • Hospital nurses may play an important role in identifying BZRA as a PIP. Importance of communication between night and day shifts, and with physicians through ward rounds *(Q7, Q8)*. • Clinical pharmacists do not participate in ward rounds or multidisciplinary meetings (BE, ES, CH). Nurses do not participate in ward rounds (GR). • Family and informal carers may also help to identify side effects of BZRA (ES, NO, BE) (Q9).	*(Q4) "Benzodiazepines are not the devil. […] They are not drugs that can kill you just like that. […] If you are an old person and you don't sleep well, then you are dizzy the next day, and you can fall. If you fall, usually you're gonna have a fracture."* (GP, GR) *(Q5) "These patients […] may tend to become agitated […]. So really within the [hospital] centre, it [BZRA] is often required so that the patient's adaptive process to a different environment is maintained."* (Clinical pharmacist, ES) *(Q6)* "*Anticholinergics and benzodiazepines are one of our main struggles."* (Geriatrician, ES) *(Q7)* "*[Identifying potential BZRA side effects] It's one of our primary jobs […] because we are there 24/7, the physicians are not."* (Nurse, NO) *(Q8) "With the side effects of benzodiazepine, it's very important that you have good communication between the shifts because a lot of side effects come in the evening or at night. Usually, you don't see them so clearly during the day."* (Nurse, CH) (Q9) "*Families will say: 'He's not taking one Lorazepam, he's taking 3 or 4; or he's drowsy, he falls down.'So the family is important too."* (Nurse, BE)
Step 3. Determine whether BZRA can be ceased, involving the patient in the decision	• Involving the patient in the decision is considered the most important step, but SDM is not usually implemented in hospitals (Q10, Q11, Q12). • SDM is seen as a time-consuming and burdensome activity by HCPs. • Residents may need the support of superiors to devote time to discussing BZRA with the patient (CH). • Hospital physicians do not use any communication guides or decision aids in this step (Q13). • Non-physician HCPs have a minor role in this step. • The patient's health status may mean hospitalisation is not the best time for the patient to have this conversation (Q14).	*(Q10) "There is a problem involving the patients in the decisions in the inpatient unit. So I think this is a key step that can be improved."* (Head of department, CH) *(Q11) "If you don't get them [patients] with you, it's useless. You both [patients and HCPs] get anywhere [in deprescribing], so you have to involve the patient."* (Geriatrician, NO) *(Q12) "We always tell the patient [to stop BZRA]. But we don't always give them a choice."* (Geriatrician, NO) *(Q13) "It would be better if we had an aid […] to give to patients to read about it."* (Head of department, PL) *(Q14)* "*When I was in hospital […] I was in agony, and it was not easy for me to stop it and to receive the information. So I would prefer they give me the same information a bit later. […] Then I could have talked about it when I was calm and feeling safe."* (Patient, GR)

Table 5 (continued)

Deprescribing process	Main contextual factors identified	Illustrative interview quotes
Step 4. Plan and initiate BZRA withdrawal	• Hospital physicians reported great variability when developing a BZRA tapering plan and in the use of other substitute medications (Q15). • Lack of guidelines or protocols within the healthcare organisations to deprescribe BZRA, except in primary care (ES), Pneumology (BE) and Psychiatry (PL) (Q15). Hospital HCPs may be resistant to using guidelines, which may hinder their implementation (NO) (Q16). • Psychiatrists and geriatricians are better trained to develop a tapering plan. Neurologists may fear withdrawal symptoms in the patient (PL). • Increased use of antidepressants and antipsychotics as substitutes for BZRA has been observed (GR, ES, PL) (Q17). • HCPs and patients reported low knowledge of CBT-I (Q18, Q19). Patients often prefer substitute medication rather than CBT-I (Q18, Q20). • Some physicians may trivialise the reduction process and propose high-rate tapering plans. Patients are not generally involved in the development of the tapering plans. • Clinical pharmacists (BE), neurologists, or psychiatrists (GR, ES) may help in preparing tapering plans and choosing substitutes. • Hospital physicians may lack written materials to explain the tapering plan to the patient (Q21).	*(Q15) "When discontinuation is decided, it is at the discretion of the resident how to proceed, for example, valerian is given and half a tablet of lorazepam […]. Here, a guideline would be helpful and implementable in our institution."* (Resident physician, CH) *(Q16) "I can make a lot of protocols, but it doesn't help because no one is going to follow them. I have a group of physicians who are like 'against protocols'. When I make a new protocol, it just goes to waste."* (Head of department, NO) *(Q17) "In order not to use benzodiazepines, they are being replaced by other pharmacological groups, such as antipsychotics and so on, […] and this other group of drugs are not exempt from risk either."* (Clinical pharmacist, ES) *(Q18) "At my age to get psychotherapy? (laughs) […] I don't think this will help me. It's too late for this."* (Patient, GR) *(Q19) "The term psychologist has a slightly negative connotation for older people. […] A work needs to be done in this area on how to present the treatment to patients."* (Psychologist, BE) *(Q20) "I would need a substitute drug, […] something to knock me out every night."* (Patient, CH) *(Q21) "I would need to have a good plan, to explain a clear deprescribing plan, a drawing or a calendar. Sometimes we don't do it or we improvise."* (Geriatrician, ES)
Step 5. Follow-up, monitoring and support	• When initiated in the hospital, a lack of communication between physicians and nurse teams managing insomnia at night may hamper BZRA deprescribing (Q22). • HCPs reported a lack of fluent communication between the hospital and primary care, making follow-up difficult (Q23, Q24). Communication was hampered by a lack of e-communication (GR, PL), shared EHR (BE, CH, NO) or shared, user-friendly electronic prescription system (BE, CH, PL) between hospital and primary care (Q25). • Clinical pharmacists do not perform medication reconciliation at hospital discharge (BE, CH, ES); it may be performed by hospital nurses (NO). • There is a lack of comprehensive guidelines for BZRA deprescribing that clarify the roles of hospital and primary care HCPs in the follow-up (Q26). • GP shortage crisis or a weak primary care system may make follow-up difficult (Q27, Q28). • Home-visiting nurses (BE, CH, GR, NO) or primary care nurses (BE, ES) may have an important role in follow-up. • Psychiatrists may have a role in the follow-up, mainly if the patient has a mental health diagnosis. • CBT-I is not usually available in the community. • Clinical pharmacists are rarely present in primary care (only in ES). A programme for BZRA deprescribing with community pharmacists and GPs exists, but it does not include hospital care (BE). • The involvement of informal carers might be important to ensure support and follow-up if the patient wishes.	*(Q22) "The nurses call you and say: 'Hey, he had diazepam up until yesterday, why can't we have it today? He can't sleep.' Then the resident who is on call, who has a lot of patients, just says: 'Yeah, fine. Give it.' […] That could be improved by better inter-team communication and especially having the nursing staff on board, knowing what you're doing and that they support it."* (Resident physician, CH) *(Q23) "Step 5, I think that's very often where our patients fall through the cracks, so that we initiate something but we are not following through."* (Clinical pharmacist, CH) *(Q24) "We come with a recommendation […] and patients come back after a while, and it's still the same. Maybe the communication gets lost somewhere […]. Maybe the GP doesn't get or doesn't read the message from the hospital."* (Nurse, NO) *(Q25) "If we had a better electronic system, we could communicate with GPs or physicians at the rehabilitation centre, because the communication is not there, in real life."* (Geriatrician, GR) *(Q26) "We fail, because we don't have a follow-up protocol and we don't have an established plan for interaction with the rest of the professionals who are going to follow up this patient."* (Geriatrician, ES) *(Q27) "We have a gigantic GP crisis in Norway, as in the rest of Europe, so a lot of patients don't even have a GP."* (Geriatrician, NO) *(Q28) "In our system, we have family doctors, but I never visited a family doctor. […] I have my doctor in the hospital."* (Patient, GR)

Country codes: BE: Belgium; CH: Switzerland; ES: Spain; GR: Greece; NO: Norway; PL: Poland

patient in the decision. Some interviewed patients who were recommended to stop BZRA at the hospital considered that the information provided was insufficient, that they were not involved in the decision, or that the timing of the conversation (during hospitalisation) might have been inappropriate. Other practices reported by hospital HCPs were including in the discharge letter to the GP a recommendation to deprescribe BZRA after discharge or changing BZRA as PRN (*'pro re nata'*) medication (i.e., only when needed). Both practices could occur with or without having discussed BZRA deprescribing with the patient at the hospital.

When planning and initiating withdrawal (Step 4), HCPs considered that they lacked guidelines and

protocols to standardise the process, as well as communication tools to explain the tapering plan to patients. CBT-I was barely known by HCPs and patients, and a low availability of CBT-I was reported across contexts. Most of the interviewed patients reported a preference for a substitution medication rather than completing CBT-I sessions during withdrawal. HCPs considered that Step 5 (Follow-up, monitoring, and support) was negatively influenced by poor interprofessional communication within and across healthcare organisations. The involvement of nursing teams was considered particularly relevant to support the patient at night if withdrawal was initiated during hospitalisation. Improving communication and collaboration in the transition of care was considered a priority by most HCPs.

Specific to each care trajectory were the length of stay or consultation, the types of HCPs participating, their roles, and the communication channels between them. The average length of stay ranged from 4 days (Geriatrics, Norway) to 13 days (Geriatrics, Spain), and consultations lasted an average of between 40 minutes (Neurology, Poland) and 180 minutes (Geriatrics, Norway). This could influence the time available to HCPs to discuss BZRA deprescribing with patients. Clinical pharmacists were only present in the care trajectories of three countries (Belgium, Spain, Switzerland); and psychiatrists or neurologists were considered to play a more important role in three care trajectories (Intermediate Care Centre, Spain; Internal Medicine, Greece; and Neurology, Poland). Two care trajectories included possible referrals to sleep clinics (Pneumology, Belgium; and Neurology and Psychiatry, Poland). Regarding IT systems, national electronic prescription platforms shared between hospital and primary care were available in the care trajectories of Norway and Spain, but unavailable in some care trajectories (Belgium and Switzerland) or considered not user-friendly by HCPs, leading to limited use (Greece and Poland). Communication between hospitals and primary HCPs in the care trajectories of Belgium, Norway, Spain, and Switzerland occurred mainly electronically, while in the care trajectories of Poland and Greece, this communication was mainly paper-based.

Discussion

This study mapped nine care trajectories for BZRA deprescribing in six European countries. We developed an original theory-guided four-phase methodology that allowed for an in-depth description of current care trajectories at the hospitals and included the transition to primary care. The comparison of care trajectories enabled the depiction of general care trajectory maps through inpatient and outpatient care and the identification of key features across contexts and healthcare systems. The emergent key features were: (A) BZRA deprescribing as a complex care process; (B) team structure and communication across teams for seamless care transition; (C) SDM as a key component of deprescribing and the challenges of its implementation; and (D) fostering the use of guidelines and supporting tools to enhance deprescribing.

BZRA deprescribing as a complex care process

According to the literature, hospital care can represent an opportunity to safely initiate deprescribing [56–58]. However, in line with previous research [59, 60], we found that BZRA deprescribing was rarely initiated at the hospital in current care, except in geriatric departments and sleep clinics. Our description of care trajectories showed that hospital BZRA deprescribing is not usually carried out by one HCP in one healthcare setting but is rather a complex care process likely to involve multiple HCPs from different healthcare settings. Steps of BZRA deprescribing can appear as an iterative rather than a linear process.

In this study, we found that mainly the first two steps of the deprescribing process (i.e., Medication history and Identification of BZRA as a PIP) were considered part of routine clinical practice across hospital departments. Hospital HCPs reported that they mainly initiate the conversation with the patient about BZRA deprescribing (Step 3) when the reason for admission or consultation was related to the consumption of BZRA, or if potential side effects of BZRA were observed during hospitalisation (i.e., reactive deprescribing), which is consistent with previous research [13, 59–61]. Thus, BZRA deprescribing interventions should focus on supporting HCPs to implement the last three steps of the deprescribing process regardless of the reason for admission or identifiable BZRA side effects (i.e., proactive deprescribing). However, a previous scoping review found that most deprescribing interventions developed and evaluated thus far focus on helping HCPs to identify PIPs (Step 2) [62].

Team structure and communication across teams for seamless transitions

Recent literature reviews have recommended the implementation of multidisciplinary interventions and clarification of the roles and responsibilities of HCPs to enhance deprescribing [29, 63]. In our work, we used the care trajectory maps to describe current deprescribing tasks performed by HCPs in each context. Care trajectory maps could be used as an implementation tool to better design and implement multidisciplinary team interventions by accounting for the existing workforce and supporting the integration of HCPs' roles in clinical care workflows.

Literature suggests that the participation of pharmacists in teams could lead to more effective deprescribing

[63, 64]. Face-to-face communication between pharmacists and physicians, or the participation of pharmacists in ward rounds, has been suggested as mechanisms to improve interprofessional collaboration and hospital deprescribing [30, 65]. However, hospital pharmacists were a scarce resource in the studied departments, with clinical pharmacists being present in only three countries (Belgium, Spain, Switzerland) and only in one of them did they collaborate with physicians and patients directly in the ward (Belgium). Clinical pharmacists did not participate in hospital ward rounds in any of the care trajectories.

The role of nurses in deprescribing has been scarcely studied [66]. In our study, nurses were present in all inpatient units and emerged as the first-line HCPs managing patients' insomnia at night. Hospital nurses may also have a relevant role in supporting patients during deprescribing and identifying potential side effects of BZRAs. Interviewed HCPs reported that ineffective communication between physicians and nursing teams hindered continuity of care for BZRA deprescribing during hospitalisation.

A previous scoping review suggested that IT systems may facilitate interprofessional communication within and across care settings for seamless deprescribing [31]. In our study, we found that the lack of user-friendly shared e-prescription systems or shared EHRs did indeed hinder BZRA deprescribing and communication among HCPs. Furthermore, interviewed HCPs across care trajectories identified the lack of effective communication between hospital and primary care as a major inefficiency that hampered follow-up and continuity of care. Other qualitative studies have also pointed to major challenges in care transitions for hospital-initiated deprescribing [61, 67]. Thus, future BZRA deprescribing interventions should consider available communication channels and include context-sensitive strategies to promote interprofessional communication and collaboration across care settings.

SDM as a key component of deprescribing and the challenges of its implementation

Interviewed HCPs and patients considered patient participation in SDM as a crucial step in BZRA deprescribing, consistent with recent clinical guidelines [68]. Our study showed that little involvement of patients and informal carers in SDM was a main bottleneck in hospital BZRA deprescribing. Previous research has also suggested deficiencies in patient involvement when deprescribing medication at the hospital [69]. Our study found that SDM could be transversal to several steps of BZRA deprescribing in which different HCPs may participate. For instance, SDM is key when deciding to commence BZRA deprescribing (Step 3), but it should also be applied when defining the tapering plan and possible alternative treatments (Step 4). Through the description of care trajectories, we found that hospital physicians may initiate SDM conversations with patients that could be continued with primary care HCPs after discharge. The repetition of the SDM process within hospitals and primary care can be seen as a positive redundancy, as the patient may need time to reflect or have recovered from the acute illness to make an informed decision [25]. Good interprofessional communication is needed to ensure SDM can be applied by multiple HCPs and in multiple steps of the care trajectory. Communication standards of SDM could be adapted and included in deprescribing interventions to ensure continuity of care [70].

Fostering the use of guidelines and supporting tools to enhance BZRA deprescribing

The literature recommends the use of guidelines to increase the effectiveness of deprescribing [63]. Multiple guidelines and deprescribing tools are available in the literature [68, 71], but these have not been adapted or implemented in most of the care trajectories described here. In addition, most of the interviewed HCPs reported not using them in routine care, except for some pharmacists, geriatricians, and psychiatrists. This is concordant with another qualitative study on barriers to hospital deprescribing [67]. In our study, some HCPs expressed interest in introducing guidelines to standardise the BZRA deprescribing process; however, others feared HCPs' resistance to using them. Some implementation strategies for deprescribing guidelines are incorporating deprescribing recommendations in disease-based guidelines [24, 72] and adapting guidelines to the local context by involving front-line HCPs. In our interviews, some HCPs reported a need for comprehensive guidelines that include hospital and primary HCPs and integrate several disciplines to better plan the follow-up of BZRA deprescribing after hospital discharge. The care trajectory maps could serve to identify key stakeholders to involve when adapting and implementing comprehensive guidelines for BZRA deprescribing or insomnia for local contexts.

CBT-I has been recommended as the first-line treatment for insomnia and can also be applied when deprescribing BZRA [73]. In line with a previous literature review [74], interviewed HCPs and patients expressed limited knowledge about CBT-I and its potential benefits. Most of the interviewed patients were unwilling to receive CBT-I, which could be due to a lack of knowledge on its form and content. Additionally, many patients did not consider insomnia to be a psychological problem and did not see the benefit of this type of psychotherapy could bring them. Future BZRA deprescribing materials for HCPs and patients should include information on CBT-I

and its potential advantages, which may also increase patients' acceptance of the therapy. Moreover, the availability of CBT-I was poor, with only two care trajectories including possible referrals to sleep clinics (Pneumology in Belgium and Neurology in Poland). Recent research has proposed the use of self-administered CBT-I which could improve treatment accessibility and acceptability [75, 76]. Future BZRA deprescribing interventions may assess the best format to deliver CBT-I for older adults.

Strengths and limitations

To the best of our knowledge, this is the first study that describes care trajectories related to BZRA deprescribing in older adults across transitions of care. By interviewing patients, informal carers, managers, and several disciplines of HCPs across healthcare organisations, we included the different perspectives recommended in the literature to diagnose current care processes and available resources [32, 43]. Patients and informal carers are key stakeholders in ensuring the delivery of person-centred care [77], but they have been frequently forgotten when mapping care processes [78]. An important strength of this study is that we involved patients, informal carers, and patients' representatives in the description of care trajectories. We also used evidence-based frameworks to guide data collection and analysis. The use of theoretical models or frameworks has been recommended as a good practice to analyse contextual factors and foster implementation [79]. Moreover, care trajectory maps were validated with front-line HCPs. The validation of maps has been identified as a quality criterion for developing rigorous care process representations; nevertheless, it is frequently overlooked in existing research [78].

This study has intrinsic limitations. First, most of the interviews were carried out in English, so some participants could not use their native language during the interviews. This could have undermined the quality of the data collected in some countries [80]. In cases where participants could not speak English (e.g., patient interviews), a translator participated in the interviews and transcripts were reviewed by the same translators to increase accuracy. On the other hand, the use of English as a common language allowed the same researchers to conduct all the interviews and thus increase the consistency in data collection. Second, we cannot rule out a social desirability bias in HCPs' answers. Nonetheless, by interviewing HCPs across different disciplines and career levels (e.g., heads of department and resident physicians), as well as patients or informal carers for each care trajectory, we were able to triangulate the responses to a certain extent. Third, as context is dynamic and changes over time, care trajectory descriptions may be only valid for a certain period of time. However, care trajectory maps can be seen as live documents that could be co-refined with HCPs and patients as context evolves [39]. Fourth, the care trajectories mapped did not cover the transition from hospital to long-term care facilities, although these could account for up to 50% of discharges from the Geriatric departments participating in this study. Finally, as data were collected with participants from one or two healthcare organisations per country, they may not represent the reality of the whole country, and extrapolation of results should be done cautiously. However, the fact that we found similar challenges across healthcare systems and organisations may indicate that some results could be generalised to similar contexts.

Implications for future research

The methodology and visual map representation developed in this study could be used by other researchers to describe care trajectories relative to deprescribing BZRA or other PIPs in other contexts. Further studies could explore care trajectories for BZRA deprescribing that encompass long-term care facilities - a relevant setting for older adults where high rates of BZRA use have been reported [81]. Furthermore, future research could investigate the influence of wider contextual elements, such as existing policies for deprescribing and the type of healthcare system, on care trajectories for BZRA deprescribing, an aspect that was beyond the scope of this study.

In the BE-SAFE project, the results of this study, along with a quantitative survey on physicians' barriers to deprescribing [82], were used to develop an evidence-based intervention to deprescribe BZRA [83]. For instance, based on our findings, a standard form was included in the BE-SAFE intervention to improve communication in the transition of care at hospital discharge. The care trajectory maps and the specific contextual factors identified could be used by local researchers to support the adaptation of the BE-SAFE intervention to local contexts. For example, local adaptations could include information about possible access to sleep clinics in the materials provided to hospital HCPs and patients, when such clinics form part of the care trajectory. As the BE-SAFE intervention will be evaluated in a randomised controlled trial (RCT) with usual care as the basis of the control group, the description of usual care through the care trajectories will also help interpret the outcomes of the RCT [30].

Implications for policy and practice

The results of this study entail relevant implications for policy and practice. Policy-makers should prioritise the implementation of BZRA deprescribing programmes that promote SDM and interprofessional collaboration along the care trajectory, and avoid programmes that focus on a single healthcare setting with one referent HCP (siloed programmes). Future BZRA deprescribing

interventions should include context-sensitive strategies to: 1) promote the implementation of SDM, such as the use of communication tools or patient decision aids; 2) support a multidisciplinary approach and better integrate the tasks of different HCPs in the care trajectory; 3) ensure interprofessional communication and continuity of care in the transition from hospital to primary care. New protocols, guidelines, or programmes for BZRA deprescribing should incorporate the perspectives of the different actors that participate in the care trajectory across care boundaries and include patients and informal carers to ensure patient-centred care.

Conclusions

We applied an innovative theory-based methodology to describe current care trajectories, identify inefficiencies, and characterise contextual factors influencing deprescribing. The description of care trajectories showed that hospital-initiated BZRA deprescribing is a complex care process that may involve multiple HCPs across healthcare settings. The main bottlenecks in the care trajectories were related to poor implementation of SDM and clinical guidelines, insufficient interprofessional collaboration, and fragmented care. Deprescribing interventions should include context-sensitive strategies to promote patient participation in SDM and enhance interprofessional communication and collaboration along the care trajectory. Care trajectory maps may help to implement deprescribing interventions in usual care and better integrate the role of different HCPs in the clinical workflow.

Abbreviations

BZRA	Benzodiazepines and z drugs
GP	General practitioner
CBT-I	Cognitive behavioural therapy for insomnia
EHR	Electronic health record
OTC	Over-the-counter medication
PIP	Potentially inappropriate prescription
SDM	Shared decision making

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12913-025-13725-2.

Supplementary Material 1

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Author contributions

JM, JG, and AS conceived the study and JM and MLT designed it. TRA, MSH, DD, VT, EC, TBW, AW, MK, RM, BP, LFM, CEA, BM, LB contributed to data collection in each country. JM and MLT conducted individual and group interviews and analysed data. JM and MLT interpreted the findings. MLT wrote a first draft of the manuscript, and JM revised it critically for intellectual content. All authors read and approved the final manuscript.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request. Topic guides and surveys used in this study are available on the Open Science Framework platform (https://osf.io/b9qn8/files/osfstorage).

Declarations

Ethics approval and consent to participate

Ethical approval was granted in each country: Belgium (Ethics Committee of Namur – Hospital Mont Godinne, Belgium. 08/12/2022. Ref. B0392022000082); Greece (Ethics Committee of Eginition Hospital, 5462/27–06–2022 and 900/20–11–2022, Athens, Greece); Norway (The Regional Committee for Medical and Health Research Ethics, Norway, ref. 546,244); Poland (Bioethics Committee of the Institute of Psychiatry and Neurology, Poland – 39/2022); Spain (Comitè d'Ètica en la Recerca (CERec), University Autonomous of Barcelona, Barcelona, Spain 21/02/2023, ref. 6221); Switzerland (Ethical approval was waived by the Human Research Ethics Committee of the Canton of Bern, Switzerland (Req-2022–01423. 21/11/2022), as the study did not fall under the Human Research Act.). This study complied with the basic ethical principles contained in the Helsinki Declaration in its most recent version, from 2013. Participants signed a written informed consent form prior to their participation when needed. A consent form was not needed for interviewing HCPs in some countries.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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