

Evaluation of discharge management in inpatient psychiatric care in Germany (E2-PSY): study protocol for a mixed-methods observational study

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Research Article

Keywords: psychiatric care, discharge management, continuity of care, care transition, statutory health policy, mixed-methods

Posted Date: August 28th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10704878/v1>

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Additional Declarations: No competing interests reported.

Abstract

Background

Mental disorders are among the leading global health challenges, with high prevalence and substantial societal costs. In Germany, nearly one in three adults experiences a mental disorder annually, while service use remains low despite very high rates of psychiatric inpatient treatment and bed capacity. The transition from inpatient to outpatient care constitutes a critical vulnerability period, associated with elevated risks of relapse, readmission, suicide, and social exclusion, underscoring the need for effective continuity of care. Against this backdrop, structured discharge management (DM) has gained prominence as a key health policy instrument to improve post-discharge follow-up and reduce treatment gaps.

Methods

E2-PSY is a mixed-methods observational study evaluating DM - mandated by national legislation since 2017 - in German psychiatric inpatient care through four subprojects: 1) Analyzing health insurance claims data for DM utilization, rehospitalization (30/365 days), and time to first outpatient contact ($n \approx 121,000$). 2) Cross-sectional online surveys among patients ($n = 1,200$) and relatives post-discharge, linked to claims data. 3) Semi-structured interviews ($n = 28$) with vulnerable groups (e.g., homelessness, first onset of psychosis) 4–8 weeks post-discharge. 4) Cross-sectional survey among healthcare providers (inpatient, convenience sampling; outpatient, $n = 1,018$). Quantitative analyses apply, among others, propensity score matching, Cox/negative binomial regression. Qualitative data undergo content/thematic analysis.

Discussion

The project addresses a critical evidence gap in evaluating legally mandated DM within German psychiatric inpatient care, despite high hospital utilization and transition-related risks like readmission and relapse. By integrating nationwide health insurance claims data, patient/relative surveys, healthcare provider perspectives, and interviews with vulnerable groups, the mixed-methods design enables comprehensive assessment of DM implementation, best practices, and barriers across sectors. Linking subjective experiences to objective outcomes via data merging strengthens validity. Findings will inform clinical guidance, quality improvement, and policy refinement to enhance continuity of care, reduce readmissions, and target high-risk populations, laying groundwork for future intervention studies.

Trial registration:

The project is registered in the German Clinical Trial Register (DRKS) under the registration numbers DRKS00035987, DRKS00035986, DRKS00036038, and DRKS00035616.

Background

Mental disorders represent a leading global health challenge, with an estimated 1.1 billion people worldwide—nearly one in every seven individuals—living with a mental disorder in 2021, and anxiety and depressive disorders being the most common (1). In Europe, approximately 140 million people (about one in six) were affected by mental health problems (2). Despite this high burden, a substantial proportion of individuals with mental disorders do not receive adequate treatment, indicating substantial unmet treatment needs in the outpatient sector (3, 4). Similarly, the availability of psychiatric hospital beds per 100,000 inhabitants varies considerably across countries (5). In Germany, home treatment has been available since 2018 as an alternative to traditional inpatient psychiatric treatment, offering intensive outreach care embedded in patients' daily lives (6, 7). Altogether, 851,985 inpatient cases are treated annually in psychiatric and psychosomatic hospitals (8). This results in costs for treating mental disorders reaching €63.3 billion in 2023 (second only to cardiovascular diseases), with mental disorders accounting for 12.9% of total healthcare expenditures (9). Over the past 20 years, case numbers have increased by roughly 48.5% (3).

The transition from inpatient to outpatient psychiatric care represents a critical vulnerability period, marked by elevated risks of relapse, readmission, suicide, and homelessness (10, 11), underscoring discharge management's (DM) pivotal role in securing continuity of care. Up to 30–50% of patients, depending on the care setting, miss their first outpatient appointment within 30 days after discharge, reflecting substantial gaps in continuity of care (12, 13). Current guidelines emphasize the importance of timely follow-up—e.g., the National Institute for Health and Care Excellence (NICE) guideline recommends an outpatient appointment within 7 days after discharge, and within 48 hours for patients with suicidality—yet implementation remains inconsistent due to insufficient care coordination, limited structural resources, and patient-related barriers (14). To ensure continuity of care and prevent treatment gaps, Germany's Social Code Book V (SGB V), section 39(1a), amended by the 2015 Statutory Health Insurance Care Strengthening Act, legally mandates structured DM for all patients leaving inpatient or day-clinic care since January 2017 (15). This national framework requires hospitals to systematically assess post-discharge needs, develop individual discharge plans, and coordinate with outpatient providers—including sociotherapy, outpatient psychiatric nursing (OPN), occupational therapy, digital health applications, and support for psychotherapy and pharmacotherapy initiation. DM also involves complementary regional psychosocial structures (e.g. social psychiatric services, 'Sozialpsychiatrische Dienste') and services for social participation and reintegration ('Eingliederungshilfe'). Additionally, the guideline for interprofessional coordinated and structured outpatient care (KSVPsych-RL) complements DM by establishing interprofessional networks for insured persons with severe mental illness and complex care needs and by mandating first network appointments within 7 working days of eligibility determination (16). Nevertheless, implementation challenges persist due to outpatient resource constraints and intersectoral silos.

To ensure structured, needs-based follow-up care for individuals with mental disorders, identifying barriers as well as best-practice models within existing discharge management can make an important contribution. However, a comprehensive evaluation of current DM practices in German psychiatry under SGB V § 39(1a) remains lacking. The E2-PSY project aims to address this evidence gap.

Methods

Study aim

The aim of the project 'E2-PSY' is to comprehensively evaluate the current DM as legally stipulated in Section 39(1a) of the German SGB V for individuals with mental disorders who are treated in inpatient psychiatric care, including day-clinic services. In Germany, day-clinic treatment ('teilstationäre Behandlung') is formally classified as part of the inpatient sector (17).

More specifically, the study aims to:

1. Conduct a comprehensive evaluation of how statutory DM is currently implemented in psychiatric settings in Germany.
2. Identify best-practice models of DM in psychiatric inpatient care.
3. Develop a practice-oriented guidance document for DM in inpatient psychiatric care, with particular consideration of vulnerable patient groups.
4. Derive evidence-based recommendations for adapting the national framework agreement on DM in psychiatry.

Study design

The project 'E2-PSY' is a mixed-methods observational study consisting of four subprojects. The mixed-methods design is realized by combining quantitative data (German statutory health insurance claims data, surveys among patients, relatives and healthcare providers) and qualitative guided interviews among vulnerable patient groups. The quantitative and qualitative data will be collected parallel (Fig. 1 provides an overview of the study's four subprojects).

- **Subproject 1:** German statutory health insurance claims data of eligible Techniker Krankenkasse (TK)-insured individuals aged 18 years or older who received inpatient psychiatric treatment between 1 January 2022 and 31 December 2023 will be analyzed.
- **Subproject 2:** A cross-sectional online survey among patients and relatives will be conducted between 1st of April 2025 and 31st of August 2025. Participants are eligible individuals insured by TK who received inpatient psychiatric treatment and their relatives.
- **Subproject 3:** Semi-structured interviews will be conducted with vulnerable patients who received inpatient psychiatric treatment and were discharged within the last four to eight weeks.
- **Subproject 4:** A cross-sectional online survey will be conducted among healthcare providers in inpatient and outpatient psychiatric care.

Subproject 1: German statutory health insurance claims data analysis

Aim. Subproject 1 aims to describe the use of DM measures, including prescriptions of medications, aids and remedies, home nursing care, sociotherapy, medical transport services, digital health applications as well as certificates of incapacity for work, based on statutory health insurance claims data. It further aims to evaluate inpatient and outpatient health care utilization in relation to the use of these DM measures following discharge.

Study Design and Participants. Subproject 1 analyses health insurance claims data of the German statutory health care insurance provider (TK). With 12 million insured persons, TK is the largest statutory health insurance company in Germany (18). Eligibility was limited to TK-insured individuals who were at least 18 years old at the time of a psychiatric or psychosomatic inpatient hospitalization reimbursed under the Psychiatric and Psychosomatic Compensation System (German acronym: PEPP) between January 2022 and December 2023. Eligible hospitalizations included inpatient, home treatment, and day-clinic services. The index event was defined as the first such qualifying treatment period occurring at age 18 years or older within the study period. Exclusion criteria applied to individuals who did not maintain continuous insurance coverage throughout the study period (including baseline and follow-up period: January 1st 2021 – December 31st 2024), employees of TK, individuals which have a registered data protection notice, and those who opted out of the use of their claims data for research purposes. For each individual included in the analysis, the index treatment event is defined as the first inpatient psychiatric or psychosomatic treatment episode with a discharge date falling within the observation period of January 1st 2022 and December 31st 2023. This index event serves as anchor for all outcome measures.

Outcomes. The subproject will examine the frequency of prescribed DM measures (i.e., prescriptions of medications, aids and remedies, home nursing care, sociotherapy, medical transport services, digital health applications as well as certificates of incapacity for work). The primary outcomes are rehospitalization rate, defined as rehospitalization for inpatient psychiatric or psychosomatic treatment within 30 and 365 days, respectively following the discharge date of the index event. Secondary outcomes include: 1) Duration from discharge to the first outpatient treatment contact, including primary care, specialist care in psychiatry and psychotherapy, occupational therapy, and sociotherapy, within 30 and 365 days after discharge date of the index event. 2) Number of days spent in inpatient psychiatric or psychosomatic treatment within 30 and 365 days after the discharge date of the index event. 3) Outpatient treatment contacts, specified as which providers were consulted, including primary care, specialist care in psychiatry and psychotherapy, occupational therapy, and sociotherapy.

Recruitment and sample size calculation. Subproject 1 is based on health insurance claims data of all TK insured individuals aged 18 years or older at the time of the index event (n ≈ 121,000). The requirement for informed consent was waived by the competent authority – the Federal Social Compensation

Office – in accordance with Section 75 (1) of the German Social Code Book X (SGB X). As this is an observational study with existing data no formal sample size calculation was performed.

Data collection and instruments. Claims data will be provided by TK. These data are routinely collected for administrative and reimbursement purposes within the statutory health insurance system and include information on diagnoses, procedures, and healthcare utilization.

Data Analysis. The utilization of DM measures will first be assessed in an exploratory manner and summarized as the frequency of each measure. In a second step, these frequencies will be presented across different F-diagnoses. Primary and secondary outcomes will be evaluated by comparing individuals who received one or more DM measures with those who received none. Associations between the primary outcomes and DM measures will be evaluated using logistic regression models. To account for baseline differences, individuals receiving DM will be propensity score-matched to individuals without DM based on pre-index variables, index-event characteristics, and sociodemographic factors. Type I error will be controlled using a hierarchical testing strategy: the 30-day outcome will be tested first, and only if this comparison is statistically significant will the corresponding 365-day outcome be evaluated. Secondary outcomes, duration from discharge to the first outpatient treatment contact within 30 and 365 days, will be analyzed using Cox proportional hazards models. The number of days spent in inpatient psychiatric or psychosomatic treatment within 30 and 365 days after discharge will be analyzed as generalized linear models with an appropriate distribution (e.g. negative binomial, depending on dispersion). Outpatient treatment contacts will be explored to identify patterns of utilization. Clustering methods will be used to describe groups of individuals with similar combinations.

Trial registration. The subproject 1 was registered in the German Clinical Trial Register (DRKS) and the WHO International Clinical Trials Registry Platform (ICTRP) on February 17, 2025: DRKS00035987.

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Figure 1 Overview of the individual subprojects of the study 'E2-PSY'. DM = Discharge Management

Subproject 2: Cross-sectional online survey among patients and relatives

Aim. The objective of this subproject is to, based on cross-sectional survey data, evaluate the subjective perception of DM among individuals insured by TK who received inpatient psychiatric treatment and their relatives. In addition, patients' survey data will be linked with health insurance claims data from TK to explore associations between subjective assessments of DM and objective health-related outcomes. Furthermore, patients' responses will be linked to data provided by their respective relatives to capture dyadic perspectives.

Study Design and Participants. Two separate online surveys will be conducted: one is targeting patients insured by TK and the other one is targeting their relatives. Eligible participants include individuals insured by TK who received psychiatric or psychosomatic inpatient care (including home treatment and day clinic services) between 1 April and 31 August 2025. Inclusion criteria comprise continuous insurance coverage with TK during the study period, age ≥ 18 years at the index event, and provision of written informed consent to participate in the online survey. Linkage of survey data with claims data will be performed only for participants providing additional, explicit consent. Exclusion criteria are employment with TK, registration of a data protection restriction, objection to the use of personal data for research purposes, or lack of continuous insurance coverage. Relatives of participating patients may be invited by the patient to take part in a separate survey. The sole inclusion criterion is the provision of informed consent prior to the commencement of the survey.

Outcomes. The primary outcome is patient-reported quality of DM. Secondary outcomes include the identification of group-specific needs, the post-discharge course, and barriers related to discharge processes.

Recruitment and sample size calculation. Patient recruitment was carried out via the statutory health insurance provider TK. Invited patients had the option to nominate a relative to participate in the separate relatives' survey. Random sampling of patients was performed at the stratum level. Based on approximately 780,000 annual inpatient psychiatric treatment cases nationwide, a confidence level of 95%, a margin of error of 10%, and five pre-specified research questions, the required sample size was calculated at $n = 1,200$. Assuming a response rate of 10%, consistent with previous experience from TK, a total of 12,000 individuals were planned to be contacted. Considering the number of psychiatric inpatient cases documented by TK ($> 100,000$ in 2021), achievement of the required sample size is deemed feasible.

Data collection and instruments: Data collection was conducted using the secure online platform Research Electronic Data Capture (REDCap). Two questionnaires were developed: (1) a comprehensive version for patients and (2) a shorter version (8 items) for relatives. Both included a combination of self-developed items (closed- and open-ended) and validated instruments.

Data Analysis. Patient survey data will be linked to health insurance claims data from TK for participants who provided additional consent. Descriptive statistics will be used to characterize DM, with subgroup analyses performed to explore differences by sociodemographic and clinical characteristics (e.g., age, gender, educational attainment, diagnoses). Open-ended responses will be analyzed using qualitative content analysis.

Trial registration. The subproject 2 was registered in the DRKS and the WHO ICTRP on April 23, 2025: DRKS00035986.

Subproject 3: Semi-structured interviews with vulnerable patients

Aim. Subproject 3 aims at identifying hindering and supporting factors of individual and structural aspects in the implementation of a structured and effective psychiatric DM as well as to derive specific needs and possible solutions. These aspects are collected via personal reports on the dismissal process. Aspects will be identified through stories of personal experiences.

Study Design and Participants. Subproject 3 involves semi-structured interviews with a sample of 28 patients who have various psychiatric diagnoses and care needs. The interviews will be conducted 4 to 8 weeks after being discharged. The aim is to explore the process of transitioning from inpatient to outpatient care, as well as to gain insights into the participants' current, individual care situation. Data will be collected through qualitative guideline-based interviews with patients who have previously undergone hospitalization and are currently receiving outpatient care. The interviewees will be asked to describe their personal experiences and perspectives regarding this transition, as well as their present care situation and ongoing care needs. Four distinct subgroups will be interviewed:

1. People with severe mental illnesses and complex care needs (addictive disorder ICD-10: F10.2, F11.2, F12.2, F13.2, F14.2, F15.2, F18.2, F19.2 and another psychiatric diagnosis: affective or psychotic disorder).
2. Patients affected by homelessness or at risk of homelessness.
3. Patients aged 65 years or older who have been admitted to a geriatric psychiatry unit and require care (e.g., care level 2 or higher).
4. Young people (up to 30 years old) with first onset of psychosis (ICD-10: F20.0-9, F23.09)

Participants must be capable of giving informed consent and belonging to one of the four subgroups. They will receive a compensation of 50 euros.

Outcomes. The primary outcome is the evaluation of the psychiatric DM as part of the inpatient psychiatric care system from the perspective of the patients. The interviews will identify hindering and supporting factors of individual and structural aspects as well as concrete derivation of needs and possible solutions. This will ensure that the experiential knowledge of patients can be incorporated into the resulting recommendations for action. Secondary outcomes are how the patients perceived their hospital stay and the atmosphere on the ward and whether they felt well treated or stigmatised. Other secondary outcomes are the personal resources and social support systems of the patients.

Recruitment and sample size calculation. Patients will be recruited from psychiatric wards, day clinics and home treatment departments. Members of the team present the project within each ward team and identify possible patients, who are eligible for recruitment. These patients will be contacted by the research team and recruited. We estimated a number of 7 participants per subgroup to achieve data saturation according to current recommendations in the literature, in total we will therefore conduct 28 interviews (19).

Data collection and instruments. The instrument to be used for the interview is a semi-structured guided interview. The interview guide was developed iteratively by the interdisciplinary study team with expertise in the relevant fields of psychiatry, psychotherapy, nursing and qualitative research. The process involved participation and discussion in, among other things, expert panels and research workshops to improve the guidelines. The guide serves as a structured tool to pose pertinent questions while allowing flexibility to address specific experiences and perspectives of the participants. It includes questions on the (inpatient/day-clinic) and outpatient discharge process, perceived stigma, challenges and needs, as well as resources and networks. In addition to the interview, epidemiological and disease-related data will be collected from the participants. Three participating researchers will conduct the interviews.

Data analysis. The analysis of the interviews will be conducted following Kuckartz's approach to qualitative content analysis (20): Both deductive and inductive categories will be developed, and the data will be coded and analysed. To support this process, the software MAXQDA (21) will be used. Data analysis will commence in parallel with data collection by the same researchers who conducted the interviews. In order to generate additional insights and impulses through diverse perspectives, exchanges with qualitative research groups will be sought in the course of the analyses. In order to generate additional insights and impulses through diverse perspectives, exchanges with qualitative research groups will be sought in the course of the analyses (22).

Trial registration. The subproject 3 was registered in the DRKS and the WHO ICTRP on July 31, 2025: DRKS00036038.

Subproject 4: Cross-sectional online survey among healthcare providers

Aim. To capture the perspectives of healthcare providers regarding DM in psychiatric care in Germany. This includes the views of those primarily involved in DM within the inpatient psychiatric care, as well as the perspectives of outpatient providers responsible for post-hospital care.

Study Design and Participants. Following a sequential exploratory mixed-methods design the subproject will be conducted in two phases (23): 1) a qualitative strand (focus group) and a 2) quantitative strand (online-survey). 1) Qualitative strand: a focus group discussion will be conducted with healthcare providers working in inpatient and outpatient care settings. Eligibility criteria include voluntary participation, age of at least 18 years, sufficient proficiency in German, current employment in psychiatric care as a physician, social worker or nurse, or current employment as a general practitioner, sociotherapist, or peer support worker. Individuals not meeting these criteria are excluded from participation. Insights gained from the focus group discussion will inform the development of the subsequent survey instrument. 2) Quantitative strand: a cross-sectional online survey will be administered to a broader sample of healthcare providers in inpatient and outpatient psychiatric care who are involved in DM and post-hospital care. Eligibility criteria include voluntary participation, age of at least 18 years, sufficient proficiency in German, current employment in inpatient psychiatric care, or current employment in outpatient care as a psychiatrist, psychotherapist, general practitioner, sociotherapist, occupational therapist or in OPN. Individuals not meeting these criteria are excluded from participation. The online survey is scheduled to take place between October 2025 and March 2026.

Outcomes. The primary outcomes of the subproject are: 1) a structured evaluation of the implementation of DM in accordance with the German SGB V and 2) the identification of barriers and resources in outpatient post-hospital care. Secondary outcomes include the identification of barriers to effective DM, the quality of cooperation and communication between inpatient and outpatient care sectors, cooperation with health insurances, and the identification of opportunities for improvement in DM.

Recruitment and sample size calculation. 1) Qualitative strand (focus group): In accordance with recommendations in the literature, a sample size of six participants was selected for the focus group (24). Participant selection was conducted in consultation with the project advisory board. 2) Quantitative strand (online-survey): A full census (convenience sampling) of all 676 psychiatric, psychosomatic, and psychotherapy departments in Germany is targeted for the survey among inpatient healthcare providers. In the outpatient sector, based on the number of registered psychiatric specialists (6,351) and psychotherapists (24,236), target sample sizes of $N = 363$ and $N = 379$, respectively, will be sought (confidence level 95%, margin of error 5%) (25). For sociotherapists (600) (26) and occupational therapists (29,000) (27), target sample sizes of $N = 83$ and $N = 96$, respectively, will be pursued (confidence level 95%, margin of error 5%). Recruitment of nurses working in OPN will follow a two-step process due to the lack of comprehensive data on the total number of OPN providers in Germany. Therefore, a full census of all 14,169 outpatient nursing services is planned, with an online survey filter to identify those offering OPN. Given the absence of precise figures for OPN providers, a sample size of $N = 97$ is targeted (confidence level 95%, margin of error 5%). This results in a total sample size of $N = 1,018$. In addition, general practitioners will be invited to participate in the survey. Recruitment (for both qualitative and quantitative strand) will be conducted through various channels: the network of the Department of Psychiatry and Neurosciences, Charité Campus Mitte, Charité – Universitätsmedizin Berlin, the project advisory board, the network of psychiatric outpatient clinics in Berlin and publicly available contact information of healthcare providers listed on relevant online platforms.

Data collection and instruments. 1) Qualitative strand (focus group): A focus group discussion will be conducted using a semi-structured interview guide to invite participants to share their views and experiences on DM and post-hospital care. The focus group discussion will be recorded and subsequently transcribed. 2) Quantitative strand (online-survey): The survey will be administered via the widely used REDCap (28). In the inpatient setting, data will be collected on the structural characteristics of the wards/facilities (e.g., number of physicians, psychologists, social workers, nursing staff, number of beds), clinical processes, the implementation of DM, and barriers encountered (e.g., prescribed services within the DM framework, contact with health and long-term care insurance providers, and outpatient care providers). Particular attention will be paid to challenges in arranging psychiatric or psychotherapeutic follow-up care. In the outpatient sector, the focus will be on evaluating contact with the inpatient sector and collaboration to ensure continuity of outpatient care.

Data analysis. 1) Qualitative strand (focus group): the pseudonymized transcript of the focus group will be analyzed according to the thematic analysis approach described by Krueger and Casey (25), using a descriptive-reductive content analysis to condense the data. For Data management MAXQDA will be used. 2) Quantitative strand (online-survey): Descriptive and inferential statistical analyses will be conducted. For group comparisons (e.g., by professional group, institutional characteristics, or setting), chi-square tests and, where appropriate, additional statistical tests will be used. Multiple regression models will be applied to examine associations between sociodemographic and structural variables, interprofessional collaboration, and key outcomes such as the implementation of DM and perceived barriers. Separate analyses will be conducted for inpatient and outpatient providers. All analyses will be performed using IBM SPSS Statistics.

Trial registration. The subproject 4 was registered in the DRKS and the WHO ICTRP on April 28, 2025: DRKS00035616.

Advisory Board

The project will be overseen by an advisory board to ensure the quality and practical relevance of the project. The board consists of representatives of people with lived experience (both patient and relatives) as well as of inpatient and outpatient healthcare providers. The perspective of people with lived experience will be incorporated in particular through the cooperation with Deutsche DepressionsLiga e.V. and Ex-IN Deutschland e.V., who will be directly involved in developing survey instruments. In addition, the advisory board will critically reflect on the project at two time points and provide ongoing feedback throughout the study to guide its implementation and further development.

Ethics

The project will be conducted in accordance with the Declaration of Helsinki. The memorandum on safeguarding good scientific practice issued by the German Research Foundation (DFG), as well as the standards of the German Evaluation Society (DeGEval), will be followed. For both the quantitative surveys (subprojects 2 and 4) and the qualitative components (subproject 3, subproject 4: focus group), written informed consent will be obtained from all participants, stating that participation is voluntary, can be withdrawn at any time without negative consequences, and that data will be used exclusively for research purposes. Participants will be fully informed about the aims of the study, the study design, and the procedures implemented to ensure data protection and confidentiality. All participant data will be pseudonymized. The complete data protection concept for data collection, transfer, storage, and analysis within the project will be based on the General Data Protection Regulation (EU) 2016/679. This is an observational study without any intervention; therefore, no adverse events are expected.

Protocol amendments

Changes to the protocol will be promptly updated in the DRKS. When necessary, approval of the responsible ethics committee will be obtained.

Discussion

The E2-PSY project addresses a critical gap in the systematic evaluation of discharge management in psychiatric inpatient care in Germany. Although structured DM has been legally mandated since 2017, comprehensive evidence regarding its implementation, effectiveness, and practical challenges in psychiatric settings remains limited. Given the high proportion of hospital-based care in Germany with increasing service utilization, and the vulnerability of patients during the transition from inpatient to outpatient care, a rigorous evaluation of current DM practices is both timely and necessary.

Contribution to the Existing Literature

International research consistently identifies the post-discharge period as a high-risk phase marked by increased rates of relapse, readmission, suicide, and social destabilization. While structured transition models and continuity-of-care interventions have demonstrated beneficial effects in some contexts (29), their implementation varies substantially across health systems. In Germany, DM is regulated within a standardized legal framework; however, psychiatric care presents unique challenges, including fluctuating symptom severity, complex psychosocial needs, stigma, and fragmentation between sectors. To date, there has been no large-scale mixed-methods evaluation examining how DM is operationalized in routine psychiatric care and how it relates to both objective healthcare utilization and subjective patient experiences.

Strengths of the Study

By integrating statutory health insurance claims data, patient- and provider-reported survey data, and in-depth qualitative interviews with vulnerable patient groups, E2-PSY provides a comprehensive, multi-method and multi-perspective assessment of DM. The combination of objective service utilization outcomes (e.g., time to first outpatient contact, rehospitalization rates) with subjective evaluations of discharge processes allows for a nuanced understanding of both structural effectiveness and perceived quality. Moreover, linking patient-reported data with claims data enables the exploration of associations between experienced discharge quality and measurable health outcomes. The use of nationwide statutory health insurance claims data from a large insurer with substantial market share ensures a broad and heterogeneous sample of patients treated in psychiatric inpatient and day-clinic settings. This enables robust analyses of real-world care patterns and post-discharge trajectories. Furthermore, the mixed-methods design allows triangulation of findings across quantitative and qualitative data sources. The parallel collection of claims data, surveys, and interviews enhances the validity and depth of interpretation. Particularly, the inclusion of vulnerable subgroups—such as individuals with severe mental illness and comorbid substance use, people affected by homelessness, geriatric patients requiring care, and young individuals with first-episode psychosis—ensures that the needs of populations at elevated risk during care transitions are explicitly addressed. The involvement of healthcare providers from both inpatient and outpatient sectors permits examination of structural barriers and intersectoral challenges from a systems perspective. Additionally, the advisory board enhances the practical relevance and participatory character of the project. The collaboration with patient advocacy organizations supports the development of instruments and recommendations that are responsive to real-world needs.

Practical implications and future directions

The findings of E2-PSY are expected to generate actionable knowledge at multiple levels. At the clinical level, identifying best-practice models and barriers in DM may inform the development of structured, practice-oriented guidance for psychiatric inpatient care providers. Such guidance can support healthcare teams in systematically assessing post-discharge needs, coordinating outpatient services, and addressing social determinants of health. At the organizational and system level, insights into structural bottlenecks—such as delays in securing outpatient psychotherapy, limited availability of sociotherapy or OPN, and communication gaps between sectors—may inform targeted quality improvement measures. These could include standardized discharge pathways for high-risk groups, early scheduling of follow-up appointments, strengthened cooperation agreements between sectors, and training programs for multidisciplinary teams. At the policy level, the project's results may provide empirical evidence to inform potential adaptations of the national framework agreement on DM. Given the specific characteristics of psychiatric care—including chronicity, multimorbidity, and social vulnerability—findings may support a refinement of existing regulatory provisions to better accommodate the needs of individuals with mental disorders. Optimized DM could contribute to reducing avoidable readmissions, shortening lengths of stay, and enhancing continuity of care, thereby improving both patient outcomes and system efficiency. The E2-PSY project may serve as a foundation for subsequent intervention studies. Based on identified best practices and barriers, future research could evaluate structured DM programs tailored to specific high-risk groups, potentially using controlled or pragmatic trial designs. In addition, digital innovations, case management models, and integrated care networks could be systematically assessed regarding their effectiveness in strengthening cross-sectoral transitions. Long-term follow-up studies could further explore the sustainability of DM-related improvements and their impact on patient-centered outcomes such as quality of life, social participation, and employment.

Limitations

Several limitations should be considered when interpreting the findings. First, claims data analyses are limited to individuals insured by a single statutory health insurance provider. Although TK covers a substantial proportion of the German population, the findings may not be fully generalizable to individuals insured by other providers or to privately insured patients. Furthermore, claims data have inherent limitations regarding validity and context information. Second, survey-based components may be affected by response bias and selective participation. Individuals with particularly positive or negative experiences may be more likely to respond, and a response rate of approximately 10% may limit representativeness despite stratified sampling procedures. Third, qualitative interviews are conducted with a purposive sample of vulnerable patients and are not intended to be representative of the entire population. However, the aim of qualitative research is depth of understanding rather than generalizability, and data saturation is anticipated within the planned sample size.

Conclusion

Transitions from inpatient to outpatient psychiatric care represent a critical juncture in the treatment trajectory of individuals with mental disorders. Despite a legally mandated framework for discharge management in Germany, systematic evaluation of its implementation and effectiveness in psychiatric settings has been lacking. The E2-PSY project addresses this gap through a comprehensive mixed-methods approach integrating claims data, surveys, and qualitative interviews across multiple stakeholder perspectives. By identifying best-practice models, structural barriers, and the specific needs of vulnerable patient groups, the project aims to contribute to the optimization of discharge management in psychiatric care. Ultimately, improved DM has the potential to enhance continuity of care, reduce avoidable readmissions, and strengthen cross-sectoral collaboration.

Abbreviations

DM *Discharge Management*

DRKS *Deutsches Register Klinischer Studien (German Clinical Trial Register)*

ICTRP *International Clinical Trials Registry Platform*

NICE *National Institute for Health and Care Excellence*

OPN *Outpatient psychiatric nursing*

REDCap *Research Electronic Data Capture*

SGB V *Sozialgesetzbuch, Fünftes Buch (German Social Code Book V, Statutory Health Insurance)*

SGB X *Sozialgesetzbuch, Zehntes Buch (German Social Code Book X, Procedures and Data Protection)*

TK *Techniker Krankenkasse (Statutory Health Insurance)*

Declarations

Ethics approval and consent to participate

The four subprojects of the study were approved by the ethics committee of the faculty of medicine of the Charité – Universitätsmedizin Berlin (Subproject 1 EA4/193/24, Subproject 2 EA2/065/25, Subproject 3 EA4/090/25, Subproject 4 EA1/303/24). All methods are carried out in accordance with the guidelines and regulations of the Declaration of Helsinki including informed consent from the participants were applicable, ensuring participants' privacy and confidentiality, minimizing risks, and ensuring the benefits of the research outweigh the potential harms.

Consent for publication

Not applicable.

Competing Interests

No competing interests declared.

Funding

The study is funded by the Federal Joint Committee (G-BA): 01VSF23037.

Author Contribution

CH: Conceptualization, Methodology, Software, Formal analysis, Investigation, Writing – Original Draft, Visualization, Project administration, TJH: Software, Writing – Original Draft, Visualization, SL: Software, Formal analysis, Investigation, Data Curation, Writing – Original Draft, JS: Formal analysis, Investigation, Data curation, Writing – Original Draft, DM: Investigation, Writing – Original Draft, HKS: Formal analysis, Investigation, Data curation, Writing – Original Draft, CR: Data curation, Formal analysis, RK: Methodology, Formal analysis, Data curation, Writing – Original Draft, SZ: Resources, Writing – Original Draft, US: Methodology, Resources, Writing – Review & Editing, StS: Conceptualization, Methodology, Writing – Review & Editing, Resources, Funding acquisition, Supervision, JLO: Conceptualization, Methodology, Writing – Review & Editing, Project administration, Resources, Funding acquisition, Supervision. All authors have read and approved the final manuscript.

Acknowledgements

Not applicable.

Data Availability

The quantitative datasets generated during the current study are available from the corresponding author on reasonable request. Full transcripts of the qualitative data generated during the study will not be publicly available, as they might identify individuals, even though they are anonymized.

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Figures

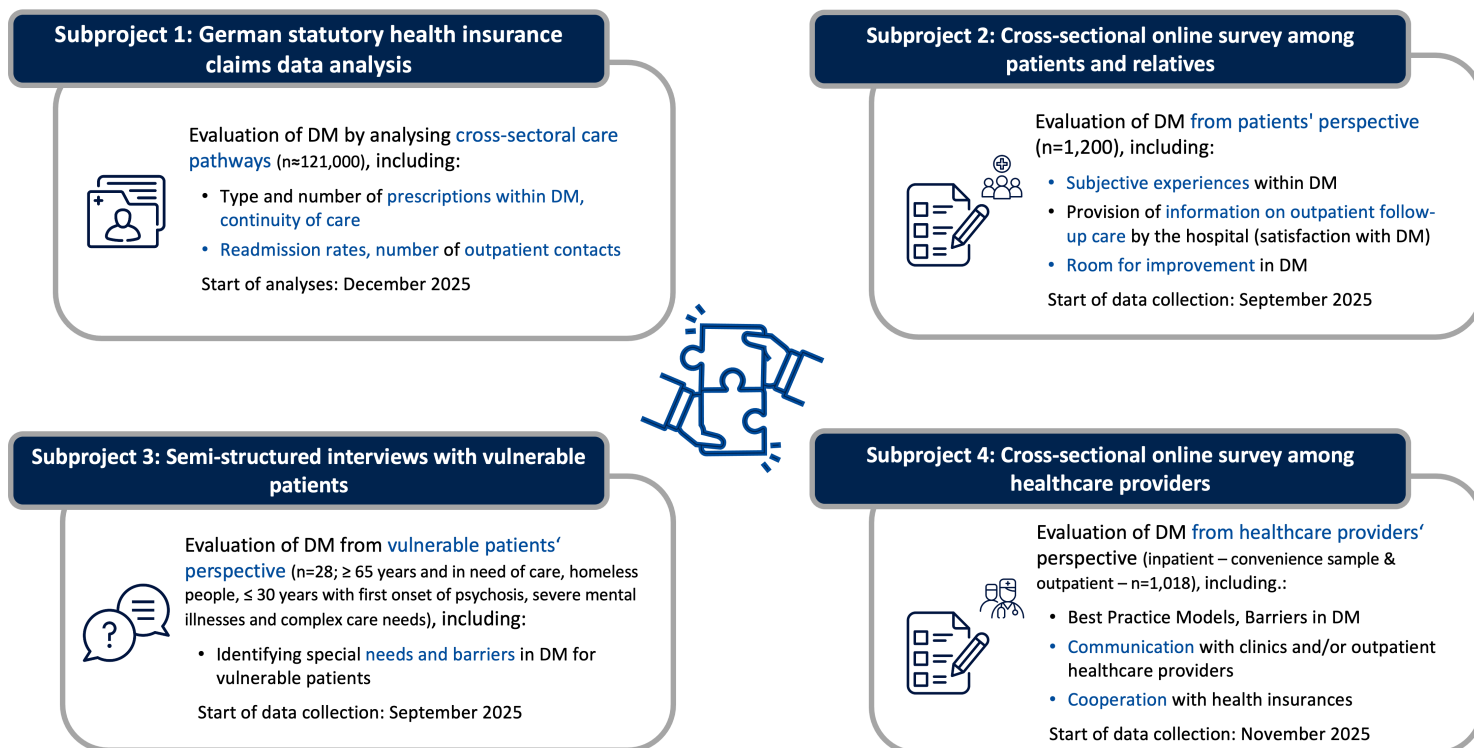


Figure 1

Overview of the individual subprojects of the study 'E2-PSY'. DM = Discharge Management