Original Paper

Stakeholder Perspectives on Information About Digital Health Applications in German Outpatient Mental Health Care: Qualitative Interview Study

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Abstract

Background: Digital health applications (digitale gesundheitsanwendungen; DiGA) were integrated into the German statutory health care system in 2020 and can be prescribed by physicians and psychotherapists. Nevertheless, their use within routine care, particularly in the treatment of mental disorders, remains limited. Previous research suggests that a lack of information and knowledge among health care providers and patients may contribute to these difficulties.

Objective: This study aimed to explore the perspectives of stakeholders on the information-related aspects of DiGA implementation in outpatient mental health care in Germany. This included investigating the perceived information status, information needs, suitable information providers, and potential approaches to improve information provision.

Methods: We conducted semistructured interviews with experts representing stakeholder groups relevant to DiGA in outpatient mental health care in Germany. Participants were recruited using purposive stakeholder sampling. Potential participants were identified through existing professional contacts and web-based searches and were subsequently approached by email. The web-based interviews were conducted via Microsoft Teams between September and November 2023. The transcripts were analyzed using qualitative content analysis based on the method described by Kuckartz, combining deductive and inductive category development.

Results: A total of 13 interviews with 14 participants were conducted, comprising 5 health care provider representatives, 4 statutory health insurance representatives, 4 DiGA developer representatives, and 1 patient representative. The findings were grouped into 3 main themes: perceived information status, improvement of the information status, and information suppliers. Representatives of health care providers described a general awareness of DiGA but said they lacked more detailed knowledge required to assess and compare individual applications. They also perceived information gaps among patients. Participants distinguished between general information on aspects such as regulatory requirements and organizational processes and more detailed product-specific information. Different potential information suppliers were associated with different opportunities and problems, particularly regarding expertise, objectivity, available resources, and the ability to provide product-specific information.

Conclusions: The findings indicate that information-related challenges in the implementation of DiGA extend beyond general awareness. Health care providers may require accessible information with different levels of detail, while the source of information

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also appears relevant. Addressing these different information needs may support the integration of DiGA into outpatient mental health care.

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KEYWORDS

DiGA; digital health application; digitale gesundheitsanwendung; health care research; information; mental disorders; mental health care; mHealth; mobile health; qualitative research

Introduction

Mental disorders represent a significant challenge to the health care system in Germany. Approximately 28% of adults experienced a mental disorder within a 12-month period between 2009 and 2012 [1]. Furthermore, absenteeism from work due to mental disorders increased by 146% between 2000 and 2023, highlighting the significant societal burden of mental disorders [2]. Timely access to outpatient psychotherapy remains challenging; German claims data for patients with depression indicate an average time of approximately 13 weeks between initial contact with a psychotherapist and the start of psychotherapy [3]. These challenges highlight the need for additional approaches to support existing structures. Digital mental health interventions are one low-threshold approach for expanding the range of options available in outpatient care.

Germany introduced a specific regulatory and reimbursement framework for mobile health (mHealth) apps with the Digital Healthcare Act in 2019, and the first digital health applications (Digitale Gesundheitsanwendungen; DiGA) became available in October 2020 [4]. DiGA are certified and quality-assured mHealth apps that can be prescribed by physicians or psychotherapists and are reimbursed by statutory health insurance (SHI). Alternatively, insured individuals have the option of applying directly to their SHI fund, should they be able to provide up-to-date proof of a relevant diagnosis. To qualify for reimbursement, DiGA must undergo the DiGA-Fast-Track Assessment conducted by the Federal Institute for Drugs and Medical Devices (Bundesinstitut für Arzneimittel und Medizinprodukte; BfArM). As part of this procedure, the BfArM evaluates whether the app meets requirements concerning suitability for use, data protection, quality, interoperability, and whether a positive health care effect has been or can be demonstrated during a provisional listing period [4]. DiGA can be listed permanently or provisionally; in the latter case, the app is already reimbursable while additional evidence of its positive effects is generated during an evaluation period of up to 12 months, which can be extended by up to another 12 months [4]. As of October 2026, 63 DiGA were listed in the directory, of which 30 were designed for the treatment of mental disorders [5].

Despite their formal integration into the health care system, low use rates show that DiGA have not yet become an established part of routine care [6]. Previous research suggests that limited information and knowledge may contribute to difficulties in their implementation. In a cross-sectional survey study in 2022, only 22% of general practitioners reported feeling confident about advising patients on DiGA [7]. More recent qualitative research among general practitioners identified information needs regarding evidence, usability, and cost-related aspects of DiGA [8]. Similar information needs were reported among psychotherapists, who additionally emphasized aspects such as data privacy and guidance on the prescription process [9]. Awareness remains limited among the general population in Germany, with a recent representative study showing that over 90% of respondents were unfamiliar with DiGA [10]. This suggests that adequate information may be relevant both for those recommending DiGA and for those potentially using them. Thus, the current level of information and awareness may represent a barrier to the broader implementation of DiGA, while appropriately tailored information could support their integration into routine care.

The implementation of DiGA involves several stakeholders with different roles in providing, receiving, and communicating information. These include health care providers, SHI funds, DiGA developers, and patients, whose perspectives may differ according to their respective roles in the care process. Against this background, the present study focuses on the information dimension of DiGA implementation in outpatient mental health care in Germany. The analysis provides an in-depth examination of information-related topics across stakeholder perspectives. Specifically, the study explores the perceived information status regarding DiGA, approaches to improving the information status through general and product-specific information, and the roles of different information suppliers in outpatient mental health care.

Methods

Overview

The manuscript reports an analysis of information-related aspects within an interview study. The other publication, based on the same interview material, examined the pathways to accessing DiGA [11]. Reporting was guided by the 32-item COREQ (Consolidated Criteria for Reporting Qualitative Research) checklist [12]. The completed checklist is provided in Multimedia Appendix 1.

Study Design and Reporting

This exploratory qualitative study used semistructured expert interviews to investigate stakeholder perspectives on the implementation of DiGA in outpatient mental health care in Germany. The interviews form part of the broader mixed methods project, “Realizing the Potential of Digital Health Applications in Outpatient Mental Health Care” (DiGAPsy), which analyzed the implementation of DiGA in outpatient

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mental health care from various angles. The main objective was to identify barriers and develop health policy recommendations to improve the integration of DiGA into mental health care [13]. The mixed methods project included a scoping review [14], an analysis of SHI claims, qualitative analysis of focus groups and expert interviews [11], patient and health care provider surveys, and preference evaluation among both groups [15].

Theoretical Framework and Interview Guide Development

The interviews aimed to explore the barriers to implementing DiGA and potential approaches to addressing these issues. The interview guides covered several areas relevant to the broader DiGAPsy project, including general experiences with DiGA, implementation barriers, information needs and provision, adherence, organizational structures, and potential models for integrating DiGA into outpatient mental health care.

Four semistructured interview guides were developed for representatives of the following stakeholder groups: health care providers, patients, DiGA developers, and SHI funds. The interview guides were based on the research questions and objectives of the DiGAPsy project and on the findings of a previously conducted scoping review [14]. KH initially developed the guides, which were subsequently revised by CA and discussed within the project consortium. Before data collection began, each stakeholder-specific guide underwent an internal pretest within the project consortium to assess comprehensibility, thematic structure, and feasibility. Based on this pretest, minor adjustments were made to the wording and structure of individual questions. No pilot interviews with representatives of the target stakeholder groups were conducted. The guides followed a common thematic structure, but individual questions and their wording were slightly adapted to the role of the respective stakeholder group. Participants were informed about the topics of the interviews but did not receive the interview questions in advance. The complete interview guides are provided in Multimedia Appendix 2.

Sampling and Recruitment

A purposive stakeholder sampling strategy was defined before recruitment. Four stakeholder groups were considered relevant because of their roles in the DiGA care process and in providing, receiving, and communicating information about DiGA. Health care provider representatives were included because they can prescribe DiGA, integrate them into routine care, receive information from other stakeholders, and interact with patients. SHI representatives were included because SHI funds provide an alternative point of access to DiGA, pay for the applications, and have established channels for communicating information to their insured. DiGA developer representatives were included because developers provide the applications and communicate product-specific information about their own products. A patient representative was included because patients receive information from these different sources and may also contribute to the information exchange by communicating with other stakeholder groups. The selection of these stakeholder groups and potential institutions was discussed within the DiGAPsy project consortium before recruitment started.

Potential institutions were identified through existing professional contacts of the research team and additional web-based searches for organizations belonging to the predefined stakeholder groups. Institutions were selected to represent different perspectives within these groups. For SHI funds, different types of SHI funds were considered. Among DiGA developers, both larger developers offering several DiGA and smaller developers offering a single DiGA were approached. In addition, developers of both provisionally and permanently listed DiGA were considered. Health care provider representatives were recruited from medical and psychotherapist chambers, Associations of Statutory Health Insurance Physicians, and professional associations representing health care providers. Patient organizations were approached to represent the patient perspective.

Participants were eligible if they represented one of the predefined stakeholder groups and their professional role involved DiGA, digitalization, or the treatment of people with mental disorders. No additional formal exclusion criteria were defined. The participating institutions selected or referred individuals with relevant professional expertise. Potential participants were subsequently contacted directly by email.

In total, 15 institutions were contacted, of which 2 declined participation. Because participants were recruited as institutional experts on the basis of their professional roles and expertise rather than individual characteristics, sociodemographic characteristics such as age and gender were not considered for participant selection or systematically collected. Individual previous experience with DiGA was likewise not systematically assessed. One patient representative was included in the expert interview sample. Within the broader DiGAPsy project, patient perspectives were examined in more detail in 2 separate components: a qualitative focus group study involving 31 patients and a cross-sectional survey involving 1413 patients.

Sample Size and Thematic Coverage

The target number of 12 expert interviews was predefined during the planning of the DiGAPsy project [13]. Recruitment was concluded after this predefined target had been reached. One additional interview was conducted because a stakeholder who had already been approached agreed to participate at a later stage. Overall, 13 interviews involving 14 participants were conducted; 1 interview included 2 SHI representatives. The final sample comprised 5 health care provider representatives, 4 SHI representatives, 4 DiGA developer representatives, and 1 patient representative. A detailed overview of the interviews and stakeholder groups is provided in Multimedia Appendix 3.

No formal assessment of theoretical or thematic saturation was conducted during data collection or analysis. The sample size was determined by the predefined study plan rather than by a saturation criterion. Accordingly, saturation was not used as a criterion for ending data collection.

Data Collection and Research Team

The interviews were carried out online using Microsoft Teams between September and November 2023 and lasted between 52 and 82 minutes. All interviews were conducted in German. No persons other than the participants and members of the research

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team were present. No repeat interviews were conducted. Audiovisual recordings of the interviews were made after participants had provided written informed consent.

All 3 researchers who conducted the interviews had an academic background in economics, specializing in health care management. KH and FP held master's degrees, while CA held a PhD. At the time of the study, KH and FP were male researchers at the Institute for Health Care Management and Research at the University of Duisburg-Essen, while CA was a female researcher and head of the research group. All 3 researchers had previous experience conducting qualitative interviews in other research projects. During each interview, 1 researcher primarily moderated the discussion, while another researcher followed the conversation and contributed follow-up or clarification questions where appropriate. Brief notes on potential follow-up questions and specific participant statements were made during the interviews and used to support the interview. These notes were not analyzed as a separate data source.

At the start of each interview, the researchers introduced themselves and their professional roles and explained the purpose of the research project. Two of the interviewers (CA and FP) had previously met 2 participants in the context of an interview or workshop conducted as part of a previous project ("Continuous Quality Assurance of Digital Health Applications," funding code: 01VSF20007). For the remaining participants, contact prior to the interviews was limited to recruitment and organizational arrangements. None of the 3 interviewers (KH, CA, and FP) had a predefined position in favor of or against the use of DiGA. No conflicts of interest related to the conduct of the interviews were reported.

Transcription and Translation

The audiovisual recordings were fully transcribed in accordance with the established transcription rules of Claussen et al [16] by student research assistants. Identifying information relating to individuals, organizations, or institutions was pseudonymized during transcription. Each completed transcript was subsequently reviewed by a second member of the research team (CA, KH, or FP). The transcripts were checked for completeness and plausibility, and unclear or discrepant passages were compared with the original recordings and corrected if necessary. The audiovisual recordings were deleted after transcription and quality assurance had been completed.

The full coding and qualitative analysis were conducted in German. For this manuscript, selected quotations were translated into English. These were then checked against the original German statements to ensure that their substantive meaning was retained.

Data Analysis

The pseudonymized interview transcripts were analyzed using MAXQDA 2022 (VERBI GmbH), based on the approach to qualitative content analysis described by Kuckartz [17]. The analysis combined deductive and inductive category development. The initial deductive coding framework was developed by KH and CA based on the main themes of the interview guides. No separate trial coding was carried out. PR conducted the initial coding of the interview material. During this first coding phase, relevant passages were assigned to the predefined deductive categories, while additional inductive codes were developed to cover themes and subthemes that were not sufficiently captured by the initial coding framework. In a second round, CA reviewed the initial coding and performed quality assurance. This review focused particularly on the assignment of individual text passages to the main categories and on the consistency of the deductive and inductive coding. Passages that were difficult to categorize, as well as ambiguities regarding the structure and definitions of individual codes, were subsequently discussed between KH and CA. Remaining differences were resolved through discussion until consensus was reached. The final information-related coding tree is provided in Multimedia Appendix 4.

The interviews and the coding framework covered several dimensions of DiGA implementation. For the present article, the analysis and reporting were restricted to the codes and coded material relating to information. Other thematic dimensions of the interview material were outside the scope of the present analysis and are addressed separately [11]. Transcripts were not returned to participants for correction, and no participant checking of the coding or study findings was performed.

Ethical Considerations

The study was conducted as part of the DiGAPsy project and was reviewed and approved by the Ethics Committee of the Medical Faculty of the University of Duisburg-Essen (reference number 23-11209-BO). Prior to participating in the study, all interviewees received written information about the project and provided written informed consent using a consent form. This covered participation in the study, the recording and transcription of the interview, the pseudonymized analysis of the data, and the scientific publication of anonymized quotations. Identifying information was stored separately from the interview transcripts, and access to the study data was restricted to the research team. Participants were offered a €100 (US $111.89 as of October 7, 2026) allowance for taking part in the interview.

Results

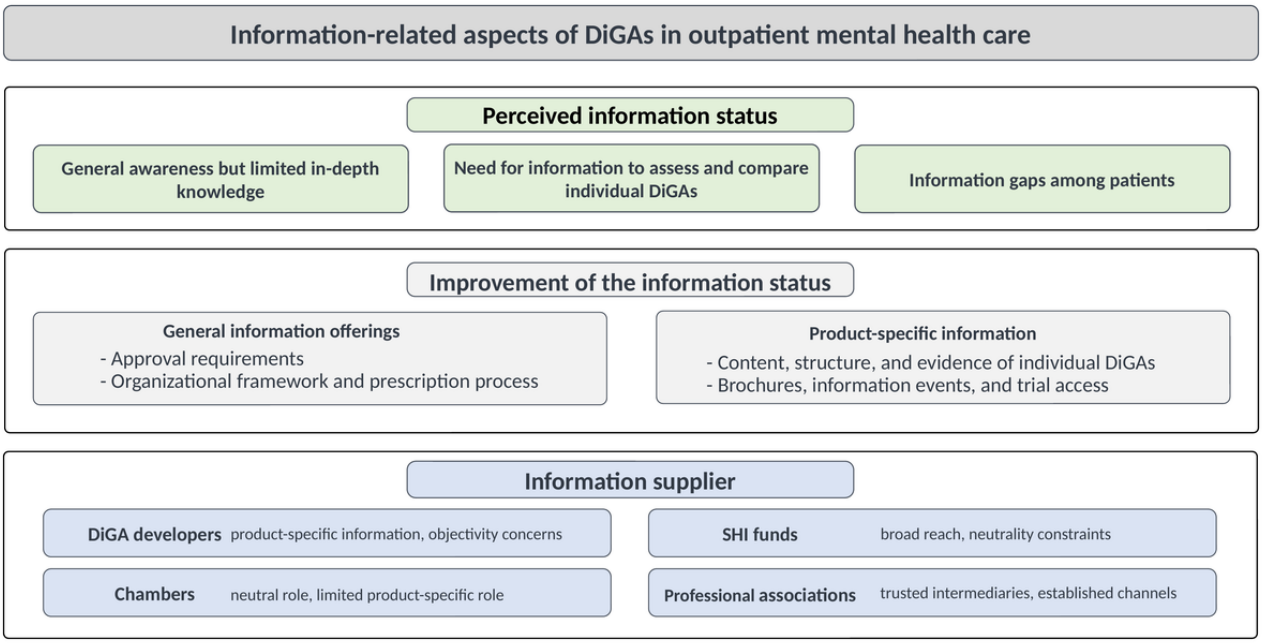
Overview

A total of 14 participants were recruited for the interviews, resulting in 13 interviews, with 1 double interview. An overview is provided in Multimedia Appendix 3.

The results reflect the experts' perspectives on DiGA for outpatient mental health care. Opinions and statements regarding information on DiGA were grouped into the 3 main categories "perceived information status," "improvement of the information status," and "information supplier." These categories and the subcategories into which the results are grouped are presented in Figure 1 and are described in the following sections.

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Figure 1. Information-related aspects of digitale gesundheitsanwendungen (DiGA) in outpatient mental health care. SHI: statutory health insurance.



Perceived Information Status

Representatives of health care providers indicated that they were familiar with the existence of DiGA but described their knowledge as mostly superficial. According to them, existing awareness did not translate into sufficient knowledge for health care providers to feel confident using them.

> *I think that is the main hurdle, that we are just not informed enough.* [Health care provider representative 3]

Similarly, DiGA developer representatives perceived that, although DiGA were generally known among health care providers, only a limited proportion had incorporated them into their routine practice.

> *The proportion of doctors who have really internalized DiGA for themselves and use it, regardless of psychology, but psychology is of course the biggest indication, is still vanishingly small.* [DiGA developer representative 4]

Information gaps were also perceived on the patient side. DiGA developer representatives described awareness and knowledge of DiGA among patients as limited, and the patient representative agreed with this assessment by also highlighting information gaps.

Beyond general awareness, representatives of health care providers described uncertainties regarding the evidence supporting individual DiGA. They were particularly concerned about the extent to which findings from clinical studies could be transferred to real-world settings and whether there was sufficient evidence on how DiGA perform in routine care.

> *Yes, so we need more, even more knowledge about how the apps work in the real world. The studies with a small group of subjects at the university who are then selected or who report under certain conditions is certainly something different than if you suggest it to patients who may already have an indication for psychotherapy and then use it until the waiting time is bridged. We have virtually no data on this yet.* [Health care provider representative 4]

Another challenge was the large number of available DiGA and the effort required to gain an understanding of each. Representatives of health care providers described difficulties in obtaining or maintaining detailed knowledge of available products, particularly when several DiGA addressed the same indication area.

> *And especially if you now imagine that 50% of DiGA go into the psych field, then I can't expect psychotherapists to be informed about all DiGA.* [Health care provider representative 2]

Participants talked about a lack of detailed, application-specific knowledge. It was indicated that the challenges concerned not mainly the availability of information but more the ability to navigate the range of applications and assess and compare the information relevant to their use.

Improvement of the Information Status

The perception of low levels of information led to considerations of how these could be enhanced. Several options for achieving this goal have been described, which can be split into 2 fields. First, general offerings to increase awareness of DiGA in general. Second, information offerings at a product-specific level with the aim of increasing awareness of one DiGA in particular.

General Information Offerings

Participants described improving general information on DiGA as a broader task involving different stakeholder groups. DiGA developer representatives emphasized that increasing knowledge would require efforts beyond individual organizations. They viewed information on aspects such as evidence, data privacy,

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and regulatory requirements as a possibility for increasing confidence in the quality and benefits of DiGA.

> *And to provide good information about DiGA, and also to address the issues of privacy and evidence, for example, at some point, to get involved in these processes and to communicate them so that not every health care provider feels that they have to look behind the scenes themselves.* [DiGA developer representative 3]

Representatives of health care providers particularly emphasized the need for clearer information on the differences in the evidence requirements for the 2 types of approval status. Some expressed concerns regarding the evidence base of provisionally listed DiGA and considered it important to communicate more clearly that the strength of evidence may differ between applications.

> *Then it would certainly be important to provide information about this, and also to say that there are also some DiGA that have really good evidence.* [Health care provider representative 4]

In addition to evidence and regulatory information, health care provider representatives expressed a need for practical guidance and an organizational framework for using DiGA in routine care. This included information on the prescription process, which was considered particularly relevant for psychotherapists, as prescribing is not traditionally part of their routine practice.

> *However, psychotherapists are not typically involved in issuing prescriptions. This is a long-standing practice that they are not familiar with.* [Health care provider representative 3]

Continuing medical education was discussed as one possible way of providing such general and organizational information. Participants considered educational formats suitable for explaining what DiGA are, how they are structured and used, and how the prescription process works. At the same time, health care provider representatives pointed to limitations of this approach when it comes to individual applications, as general educational formats cannot provide detailed information on every specific DiGA.

> *So, there are training courses on digitization that can be widely distributed, you can say we're doing a training course on how to use DiGA in psychotherapy, how to use them, but you can't focus an individual DiGA.* [Health care provider representative 2]

The usability and structure of existing information sources were also discussed. In particular, participants identified limitations of the DiGA directory. Its structure and information hierarchy were described as insufficiently user-friendly, making it difficult to identify relevant information quickly in routine care. SHI representatives emphasized that this was especially problematic when health care providers had little time to assess suitable alternatives.

> *If you imagine you have a full waiting room, then he can't go to the DiGA directory and filter for mental disorders and take a look - that's not possible.* [SHI representative 2]

Participants therefore emphasized the importance of presenting information in a more structured and standardized way. Such a framework could facilitate access to relevant characteristics of individual applications and improve comparability between DiGA, thereby supporting health care providers in assessing available options.

> *But actually, of course, I would prefer to have a relatively highly structured information framework based on certain criteria and thus be able to establish comparability between DiGA.* [DiGA developer representative 3]

Product-Specific Information

In addition to providing general information, health care provider representatives emphasized the need for more detailed, product-specific information to support the assessment of individual applications. DiGA developer representatives described product-specific information provision as a continuous process rather than a one-time distribution of information materials. They indicated that information may need to be provided repeatedly to maintain awareness among health care providers. Developer representatives also described regular information events as an established approach to providing interested health care providers with more comprehensive product-specific information. These events could be integrated into continuing medical education and were described as an opportunity to explain the content, structure, and functioning of individual applications in greater detail. The need for such product-specific information was also linked to difficulties in assessing an application before recommending it to a patient.

> *Well, if I were to recommend a book to a patient, I would always look at it first. But I can't really take a closer look at a DiGA.* [Health care provider representative 1]

Health care provider representatives therefore described a need for product-specific information that is brief and easy to grasp while still providing sufficient detail on the content, structure, and available evidence. The existing materials provided by developers were not always considered to meet these requirements, especially when their focus was primarily on promoting the application rather than providing sufficient information for its evaluation.

> *It must also be said that the DiGA developers do not provide very comprehensive information. So, when I get a flyer in the office, the product is advertised on three pages, but there is very little specific information. That's not enough for me.* [Health care provider representative 1]

The patient representative additionally emphasized that product-specific information should communicate what patients can realistically expect from using a DiGA, including the active involvement that may be required during use.

> *This is not a miracle pill, but you now have to work on yourself, it is a new experience and the patients who use it should be informed about this beforehand.* [Patient representative 1]

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Trial access for health care providers was discussed from different perspectives. Overall, participants viewed such access positively, and it was described as already being used in practice. Health care provider and DiGA developer representatives considered trial access a way of increasing transparency and reducing uncertainty by allowing health care providers to familiarize themselves directly with the content, structure, and functioning of an application. Developer representatives also described providing trial access as part of their contribution to supporting the uptake of DiGA and as an opportunity to present their own products to health care providers.

> *And I think that's the best advertising you can do, to actually give a physician the opportunity to see the program and experience it from the patient's point of view.* [DiGA developer representative 3]

At the same time, DiGA developer representatives also expressed reservations. They questioned the extent to which the experience of a health care provider testing a DiGA could reflect that of patients for whom the application was developed.

> *That's the famous bait that has to taste good to the fish and not to the fisherman, that is - and then the doctor comes along and says, hmm, and then he tries to put himself in the patient's shoes somehow, it just doesn't work.* [DiGA developer representative 4]

As an alternative to relying on health care providers to test individual applications in detail, developer representatives also emphasized the importance of designing DiGA to be simple and intuitive to use without requiring substantial additional time from health care providers.

Trial access for patients was also discussed from different perspectives. SHI representatives were generally open to this approach and considered it a simple way of increasing transparency and allowing patients to gain an impression of an application before regular use.

> *Perhaps also for the insured, so that they can simply see what the product actually is, i.e., get to grips with it.* [SHI representative 1]

DiGA developer representatives were more critical. They emphasized that indications and contraindications would need to be clarified before access could be provided. They also raised concerns about reimbursement, arguing that a DiGA may already provide benefits during an initial trial period and that these benefits would not be adequately reimbursed if access were provided before the start of regular reimbursed use.

Information Suppliers

Participants also discussed which stakeholders could provide information on DiGA.

DiGA Developers

DiGA developers were discussed as an important but also controversial source of information. For developer representatives, providing information was of particular importance as it also formed part of the marketing of their products. They described focusing their efforts primarily on health care providers, as this was considered a more efficient use of their limited resources than directly addressing patients.

> *For us, it's also a little bit of a resource issue whereby we have to look at how we can use the manpower or resources that we have wisely. We are working more with doctors right now.* [DiGA developer representative 2]

It was also noted by developer representatives that a significant proportion of DiGA developers are small companies. This means that they have fewer resources for information provision and sales activities than larger companies, such as pharmaceutical manufacturers. Nevertheless, health care provider representatives expressed criticism of the primary reliance on developers for product-specific information, as they questioned the objectivity of information that also serves marketing purposes.

SHI Funds, Chambers, and Professional Associations

DiGA developer representatives also expressed the view that other stakeholders, particularly SHI funds and chambers, should contribute more to information provision. SHI funds were considered to have established communication channels through which information on DiGA could reach insured individuals. SHI representatives themselves emphasized, however, that their information activities were subject to requirements of objectivity, limiting their ability to provide product-specific recommendations.

At the same time, DiGA developer representatives questioned the neutrality of SHI funds in this context, referring to competing in-house or selective contractual products that may be similar to DiGA. SHI representatives also described high DiGA prices and the availability of similar products as reasons for being reluctant to proactively promote DiGA to insured individuals.

> *For example, we could mobilize our call centers. And if we get a call from somebody who needs mental health counselling somewhere, we could say, look here, there's a DiGA in this area, check it out. But we don't do that and no SHI fund will do that because of the prices, because of the high prices. Maybe also because there are similar products, which might also play a role.* [SHI representatives 3 and 4]

Medical and psychotherapeutic chambers were also discussed as potential information providers. Health care provider representatives were generally open to such involvement. However, representatives of the chambers described similar limitations regarding product-specific information and emphasized their neutral role. They considered their involvement particularly appropriate when concerns regarding individual DiGA arose but did not see DiGA-specific training as part of their role.

> *If we have a reason, for example if there is imminent danger, or if we see that there is a DiGA and patients are suffering, then we can intervene. But we can't do training on a single DiGA.* [Health care provider representative 5]

Professional associations were discussed more positively as potential information providers. DiGA developer and health care provider representatives described them as having established communication channels as well as the expertise and capacity to assess relevant information and communicate

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it to health care providers. Health care provider representatives also referred to the role professional associations had played in communicating previous changes in the health care system.

> *I believe that the professional associations in particular must play an important multiplier role here.* [DiGA developer representative 3]

Overall, participants attributed different opportunities and limitations to the potential information providers. Developers were able to provide detailed product-specific information but faced resource constraints and concerns regarding objectivity, whereas SHI funds and chambers described limitations related to their neutral role. Professional associations were viewed as potential intermediaries with established communication channels and relevant professional expertise.

Discussion

Principal Findings

This article examines the role of information in the implementation process of DiGA in outpatient mental health care in Germany. Health care provider representatives described a general awareness of DiGA, while more detailed knowledge, for example, required to differentiate between individual applications and assess their evidence, was often perceived as limited. Information needs therefore appear to extend beyond raising general awareness and include both system-level information on regulatory requirements and organizational processes and more detailed information that enables the assessment and comparison of individual DiGA. In addition, the results show that the source of information is relevant, as different potential information providers were associated with different opportunities and problems. Together, these findings suggest that the information challenge surrounding DiGA concerns not only awareness but also the type of information provided and those responsible for providing it.

The distinction between general awareness and more detailed knowledge found in our interviews is also reflected in previous research. In a survey of German general practitioners, Wangler and Jansky [7] found that 87% of respondents were aware that DiGA could be prescribed, whereas only 22% felt confident in competently advising patients about DiGA and only 25% reported having a general overview of the available applications. More recent qualitative studies point in a similar direction. Sahan et al [8] identified persistent knowledge gaps among general practitioners despite experience with DiGA prescriptions, while Panitz et al [9] reported moderate knowledge among psychological psychotherapists and a shared need for further information, including information on evidence, data privacy, and prescription procedures. The distinction between general awareness and more detailed knowledge can be further interpreted using Rogers' Diffusion of Innovations Theory, which describes innovation adoption as a process comprising 5 stages [18]. The initial knowledge phase is primarily concerned with becoming aware of an innovation and developing a basic understanding of how it functions. During the subsequent persuasion phase, individuals seek more comprehensive information and form a positive or negative attitude toward the innovation. In the decision phase, a decision is made to adopt or reject the innovation, followed by the implementation and confirmation phases. Particularly during the first 3 stages, limited knowledge and experience can create uncertainty, while the type and depth of information required change throughout the adoption process [18]. When evaluated in relation to the aforementioned framework, the results of the present study indicate that health care providers have information requirements that extend beyond the initial stage and align with the persuasion and decision phases. Consequently, measures designed solely to raise awareness may be inadequate. Health care providers require more detailed information to compare DiGA, assess their evidence and suitability, and make informed judgments about their use in routine care.

Information about the evidence supporting individual DiGA emerged as an important topic. Health care provider representatives particularly expressed uncertainty regarding provisionally listed DiGA and the differences in evidence requirements according to listing status. Similar concerns have been reported by Schroeder et al [19], whose qualitative study among German health care providers identified uncertainty regarding the evidence requirements for DiGA and particularly provisionally listed applications. Understanding these regulatory differences is important, but our findings also indicate a need for information that supports the assessment and comparison of DiGA. This is consistent with the work of Mäder et al [20], who identified limitations in the transparency and completeness of evidence-related information in the DiGA directory, emphasizing the importance of information that supports health care providers in assessing applications. More structured and comparable information could therefore facilitate the evaluation of DiGA in routine care. Continuing medical education could complement this by providing more general knowledge about DiGA and their organizational and regulatory framework. Similarly, Wangler and Jansky [7] found that 52% of surveyed general practitioners considered systematic further training to be a promising approach. However, our findings also indicate limitations of general educational formats for conveying detailed information on individual applications and suggest that developer-provided information may be perceived critically because information provision and marketing overlap.

Trial access was another approach discussed in the interviews to provide more detailed, product-specific information. By allowing health care providers to familiarize themselves with the content and functioning of individual DiGA, trial access may increase transparency and support the evaluation of an application before recommending or prescribing it. This is consistent with previous findings, in which the absence of testing options was identified as a barrier among psychotherapists [9]. The German Society for Internal Medicine has similarly called for long-term access to test accounts for physicians [21]. In relation to Rogers' model, such opportunities may be particularly relevant during the decision phase, when individuals seek additional information to evaluate an innovation before deciding for or against its adoption [18]. However, the interviews also highlighted practical limitations of this approach. A detailed assessment of individual DiGA is time-consuming, particularly if health care providers need to familiarize themselves with

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several applications within the same indication. Similarly, Kendziorra et al [22] found that the time required to acquire and evaluate information regarding DiGA was a significant barrier for health care providers, hindering their integration into routine practice. Furthermore, developer representatives in our study questioned the extent to which health care providers' own experience with a DiGA can reflect the experience of patients for whom the application was developed. Trial access may therefore complement product-specific information by providing direct insight into an application, but it cannot substitute for information on evidence, suitability, and patient experience.

The limitations of individual product assessment also raise the question of which organizations could support implementation by providing and evaluating information. Our interviews showed that different information providers were associated with different opportunities and limitations. DiGA developers can provide detailed product-specific information, but health care provider representatives also questioned the objectivity of information that simultaneously serves marketing purposes. SHI funds and chambers, in contrast, have established communication channels but described limitations in providing product-specific information due to their neutral role. Against this background, professional associations were considered relevant potential intermediaries, as they combine professional expertise with established channels for communicating information to health care providers. This is consistent with Sahan et al [8], whose interviewed general practitioners also identified professional associations among the preferred sources of DiGA-related information and more broadly emphasized the importance of independent information sources.

This role can also be interpreted in light of Rogers' Diffusion of Innovations Theory [18]. Rogers emphasizes that, while media and other impersonal communication channels are particularly relevant for creating initial awareness of an innovation, interpersonal channels become increasingly important when individuals form an attitude toward an innovation and decide whether to adopt it. In this context, evaluations and experiences communicated by peers and opinion leaders can influence adoption decisions. Professional associations could therefore act as intermediaries by assessing and structuring available information and communicating it through established channels. More recently, digital health navigators represent another possible form of such an intermediary role. Freisberg et al [23] described digital health navigators as potential links between patients, health care professionals, and digital interventions and emphasized the need for specific digital, technical, clinical, and communication competencies to fulfill this role. Similarly, Schwarz et al [24] proposed digital navigators as specially trained medical assistants who support health care providers in selecting digital interventions and assist patients during their use.

Limitations

Several limitations should be considered when interpreting the findings. First, the sample comprised 14 participants representing 4 different stakeholder groups. Given this relatively small and heterogeneous sample, the range of perspectives captured within each individual stakeholder group is limited, and the findings should be understood as an exploratory account of stakeholder perspectives. In addition, sociodemographic characteristics and individual previous experience with DiGA were not systematically collected, as participants were primarily recruited on the basis of their institutional roles and professional expertise. Consequently, potential differences in perspectives according to these characteristics or previous DiGA experience could not be examined. However, including health care provider representatives, SHI representatives, DiGA developer representatives, and a patient representative meant that perspectives from different relevant positions within the DiGA care process could be examined within one analysis. Representation across stakeholder groups was unequal, with only one patient representative included. Consequently, this perspective is particularly limited, and some statements concerning patients reflect the perceptions of other stakeholders. Although this does not compensate for the limited patient representation in the present analysis, patient perspectives were examined more extensively in other components of the wider DiGAPsy project, including a focus group study with 31 patients and a cross-sectional survey involving 1413 patients.

Second, the target sample size was predefined during project planning, and no formal assessment of theoretical or thematic saturation was conducted. The study therefore does not claim that all potentially relevant perspectives on information provision were captured. Although the purposive sampling strategy allowed the inclusion of predefined stakeholder perspectives, the recruitment of participants through selected institutions may have introduced selection effects. The use of semistructured interview guides also provided a common thematic framework across stakeholder groups, although the interview guides may have influenced which aspects were discussed in greater depth. Finally, the present article deliberately focuses on information-related aspects of a broader interview study. Other implementation barriers and organizational dimensions were therefore outside the scope of this focused analysis rather than being interpreted as less relevant.

Third, all interviews and the qualitative analysis were conducted in German, whereas selected quotations were translated into English for publication. Although translation can lead to subtle changes in meaning, the translated quotations were checked against the original German statements to preserve their substantive content. The findings also need to be interpreted within the specific German DiGA framework, which differs from regulatory models for digital health interventions in other countries and may limit transferability. Nevertheless, the study provides a detailed account of information-related implementation issues within an established reimbursement system and may therefore also inform discussions about information provision for digital health interventions beyond the German context.

Conclusion

This study provides insights into stakeholder perspectives on information-related aspects of the implementation of DiGA in outpatient mental health care in Germany. The findings suggest that health care providers require more detailed and accessible

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information to assess and compare the evidence, characteristics, and suitability of individual applications.

The findings highlight practical opportunities for enhancing the existing provision of information. In particular, the DiGA directory could be developed further to make it more user-centered and facilitate access to structured, comparable information on individual DiGA. The addition of standardized explanatory or demonstration videos could provide patients and health care providers with a quick overview of an application's content, structure, and functionality. These measures could complement existing information formats and support a user-friendly assessment of individual DiGA. However, information provision represents only one component of the broader implementation process.

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Responsibility for the final manuscript lies entirely with the authors. GenAI tools are not listed as authors and do not bear responsibility for the final outcomes.

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Data Availability

The qualitative interview data generated and analyzed during this study are not publicly available because the transcripts contain contextual information that could potentially allow identification of individual participants or represented organizations. Due to these confidentiality constraints, the interview transcripts are not available for external access, including upon reasonable request.

Conflicts of Interest

None declared.

Multimedia Appendix 1

COREQ checklist.
[PDF File (Adobe PDF File), 248 KB-Multimedia Appendix 1]

Multimedia Appendix 2

Complete interview guides.
[DOCX File , 20 KB-Multimedia Appendix 2]

Multimedia Appendix 3

Overview of the conducted interviews and stakeholder groups.
[DOCX File , 15 KB-Multimedia Appendix 3]

Multimedia Appendix 4

List of codes.
[DOCX File , 24 KB-Multimedia Appendix 4]

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Abbreviations

BfArM: Bundesinstitut für Arzneimittel und Medizinprodukte
COREQ: Consolidated Criteria for Reporting Qualitative Research
DiGA: digitale gesundheitsanwendung
DiGAPsy: Realizing the Potential of Digital Health Applications in Outpatient Mental Health Care
mHealth: mobile health
SHI: statutory health insurance

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