Good Practice in the Implementation of Digital Social Care Records: A Rapid Scoping Review

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Abstract

Background: In the past decade, there has been a rise in the use of digital or electronic records in social care worldwide, capturing information key to service delivery. With the COVID-19 pandemic, the increased need for digital services further accelerated digitisation in health and social care. For example, the UK government created a fund specifically for adult social care providers to adopt digital social care records. These rapid developments offer valuable learning opportunities about digital care record implementation in adult social care settings.

Objective: This rapid scoping review aimed to understand what is known about the implementation of digital social care records in adult social care and how implementation varies across use cases, settings, and broader contexts.

Methods: The scoping review methodology was guided by Arksey and O'Malley and refined by Levac et al and the Joanna Briggs Institute. Following Tricco et al, some amendments were made to enable a rapid review. We conducted comprehensive searches based on the concepts of Digital Care Records, Social Care, and Interoperability in MEDLINE, EmCare, Web of Science Core Collection, HMIC Health Management Information Consortium, Social Policy and Practice, and Social Services Abstracts. Studies were limited to those published between 2018 and 2023 in English. One reviewer screened titles and abstracts, while two reviewers extracted data. Qualitative content analysis was conducted on the included studies, mapping findings against Greenhalgh et al's NASSS (Non-adoption, Abandonment, Scale-up, Spread, Sustainability) framework.

Results: Our search identified 2499 references. After title and abstract screening, 71 records were selected for full-text review, resulting in 31 references from 29 studies. Studies originated from 11 countries (including one multi-country), with the UK being the most represented (n=10). Studies were most often undertaken in nursing homes/facilities (n=7) with older people as the target population (n=6). Health records were the most investigated record type (n=12). We identified 45 facilitators and 102 barriers to digital care record implementation across 28 studies, spanning six of the seven NASSS framework domains and aligning with five overarching themes that require greater active management with respect to implementation. Intended or actual implementation outcomes were reported in 17 studies.

Conclusions: Findings suggest implementing digital care records is particularly complex due to a lack of consensus on what digital care records and expected outcomes and impacts should look like. The literature often lacks clear definitions and robust study designs. To be successful, implementation should consider complexity, while studies should utilise robust frameworks and mixed methods or quantitative designs where appropriate. Future research should consider defining the target population, gathering data on carer/service user experiences, and focusing on digital care records specifically being used in social care.

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Keywords: digital social care records; adult social care; digitisation; domiciliary care; care homes, electronic health records

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Introduction

The demand for adult social care (ASC) is vast in scale. Global demographic changes, particularly throughout the 20th century, have led to a significant population aging process. This has been accompanied by a decrease in mortality and communicable diseases and an increase in the prevalence of chronic non-communicable diseases, resulting in an increasing proportion of adults and older people with long-term care needs. This has been particularly intense in high-income countries, where the epidemiological transition started earlier [1]. Technology has been proposed to help deal with increasing demand in health and social care by improving efficiency, care quality and effectiveness [2-4]. Digital care records are one such example of care technology innovation across ASC.

In this paper, ASC refers to long-term, aged or disability care. It includes care homes, support in the home and domiciliary care (for example, personal care, practical tasks, and crisis support), community-based forms of support such as inclusive arts and other programmes, and social relationships that aim to keep people independent, active, and living well.

The overall use of digital care records has increased across numerous ASC settings and countries since 2012 [5]. These records capture information key to service delivery, including individuals' characteristics, the care they receive, and how they respond to it. They are often used to monitor service users and track service delivery, supporting care planning, medication, and assessments [6-10]. Additionally, they are used for administrative purposes [8, 11, 12], to comply with data documentation regulations [13], and to instruct and make decisions about care delivery [14, 15]. A range of terms are used to describe digital care records in the social care context. Across the UK, a common term is Digital Social Care Records (DSCRs). In North America, parts of Europe, and Australia the terms Electronic Health Records (EHRs) [16-20], Electronic Patient Records (EPRs) [6] or Electronic Medical Records (EMRs) [9, 19] are often used in social care settings. Digital care records can be part of initiatives frequently referred to as Health Information Exchange (HIE), which aim to facilitate data sharing across health and social care and improve care continuity and efficiency [16-20].

Despite the increasing use of digital care records in multiple contexts, much of the literature focuses on implementation either in nursing homes or from a social work perspective and has not captured the full breadth of ASC. One systematic review investigating EHRs identified that HIE is facilitated by workflow integration and flexible organisational culture, while it is impeded by incomplete data, inefficiency, and unfavourable market conditions [21]. Another found that EHRs support health outcomes, clinical documentation management, and decision-making [2]. The only, to our knowledge, previous review of DSCRs looked at the benefits of implementation [22]. This literature review similarly highlighted improved documentation and health outcomes. It also pointed to increased collaboration and communication, efficiency, quality of care, client/family involvement in care, and risk management and safeguarding [22]. It identified less evidence regarding potential financial benefits and increased workforce satisfaction [22]. It is unclear how many of these benefits were realised as opposed to anticipated [22]. A scoping review of Electronic Information Systems (EISs) in social care also found that EISs can negatively affect the priorities of social workers and do not meet the needs of the sector [23].

These reviews predate the COVID-19 pandemic, which accelerated the development of digital systems within health and social care [24]. For example, the UK government injected funds during the pandemic to drive digitisation within the sector and has continued these efforts since the pandemic eased. There is a fund specifically for ASC providers to help with the costs of DSCR adoption and the government hopes adoption rates will reach 80% of ASC providers in England by March 2024. The intensity of activity presented an opportunity to learn more about the implementation and impact of DSCRs through evaluation. Considering recent rapid developments and the opportunity for learning, this scoping review sought to assess what is known about the implementation of DSCRs across ASC settings and identify gaps in the evidence base to inform a rapid evaluation of DSCR implementation. While this purpose has influenced decisions around the methods, such as a rapid approach and more intensive searching for UK literature, the review considers the international literature on DSCR implementation and seeks to draw out implications for an international audience.

We mapped our findings against Greenhalgh et al’s NASSS (Non-adoption, Abandonment, Scale-up, Spread, Sustainability) framework [25]. This framework was designed in 2017 as an evidence-based, theory-informed, and pragmatic tool to help predict and evaluate the success of a technology-supported health or social care programme. As it focuses on adoption, non-adoption and abandonment of technologies, as well as the challenges associated with the scale-up, spread, and maintenance of digital systems, it was deemed appropriate for capturing the high levels of complexity in the field. The framework was particularly useful during data analysis. Most of the literature retrieved identified large numbers of facilitators and barriers to DSCR adoption. The NASSS framework provided a tool to position these factors within a complex, interrelated system and organise them in a way that could provide guidance in areas requiring active management to address complexity. As the NASSS framework has been applied more often to the implementation of technology in healthcare rather than social care, this review was also an opportunity to learn more about value of this framework for technology adoption in social care settings.

Methods

The rapid scoping review was conducted in accordance with the six-stage scoping review framework described by Arksey and O'Malley [26], refined by Levac et al [27] and the Joanna Briggs Institute [28]. Following Tricco et al, [29] we made some amendments to enable a rapid review. The review is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines [30]. The search strategy is reported in accordance with the PRISMA-S extension [31]. A protocol for this review was developed using the PRISMA-ScR and registered prospectively with the Open Science framework on 09/08/2023 [32].

Identifying the research question

We used the Joanna Briggs Institute PCC (population, concept, context) framework [28] to formulate the following scoping review questions: What is known about the implementation of DSCRs in social care settings? How does implementation vary across use cases, social care settings and the broader context? Sub-questions were:

1. What DSCR is being employed?
2. What situation or setting is the DSCR being used in? Which actors are involved?
3. What is the broader context within which DSCRs are being implemented or used?
4. What is the use case for the DSCR? What are the intended outcomes and benefits?
5. How has the implementation of DSCRs been evaluated/researched? What theoretical framings have been used?
6. What are the intended/actual outcomes and benefits of DSCR implementation?
7. What helps or gets in the way of the implementation of DSCRs?

Identifying relevant studies

A librarian with experience in undertaking reviews (KP) designed the search in consultation with the research team. The search was undertaken between 02/08/23-11/08/23 by two librarians (KP & SDG) on MEDLINE (through Ovid; KP); EmCare (through Ovid; SDG); Web of Science Core Collection (Clarivate; KP); HMIC Health Management Information Consortium (through Ovid; KP); Social Policy and Practice (through Ovid; KP); and Social Services Abstracts (through ProQuest; SDG).

The search strategy used three concepts: Digital Care Records; Social Care; and Interoperability. These concepts were combined in the search as (Digital Care Records AND Social Care) OR (Social Care AND Interoperability). The interoperability concept was included as it is central to policy narratives surrounding the implementation of DSCRs in England, with expectations that DSCRs will facilitate data sharing with General Practitioners (GPs) and hospitals. The initial search strategy was developed on Medline (Ovid) by one of the librarians (KP) and run in each database by KP and SDG. Publications were limited to those published in or after 2018 until 2023. Results were limited to the English language. The databases were searched using keywords and controlled vocabulary (e.g. MeSH or Emtree) where appropriate and adapted according to the requirements of each database. A full search strategy for each database can be found in Appendix 1.

There were 3466 results in total. Results were exported to EndNote and 993 duplicates were removed following a structured process [33], leaving 2473 unique results. These were exported as a RIS file to Covidence software [34] for title and abstract screening, as well as for full-text review.

Additionally, given the intention of informing an evaluation in the English context, we searched key English websites to capture grey literature not identified through the databases. Chosen websites were: the Local Government Association [35]; King's Fund [36]; Social Care Institute of Excellence [37]; Centre for Care [38]; Digital Care Hub, formerly Digital Social Care [39]; and TEC Service Association [40]. Searches were also performed on Google, and we contacted experts identified through the review. From these searches and reference checking, 27 references were identified. Of these, one duplicate was removed and one that reported results from a study already included was merged with the main reference. One reference recommended by an expert was also included. This resulted in 26 references retrieved through our grey literature search.

Study selection

We included studies that: (i) took place within ASC settings; (ii) involved the implementation of a DSCR, which may be referred to by other labels, such as electronic care records and EISs; (iii) were carried out using any study design (e.g., experimental, quasi experimental and observational, including quantitative and qualitative studies); and (iv) were published from 2018 onwards. This decision was made on the basis that existing reviews have captured the literature on DSCRs up until the end of 2017.

Following rapid review methodology guidance [29, 41], all references retrieved from our search were screened by one reviewer with expertise in systematic reviews (WSR). Initial screening was based on titles and abstracts. References were selected for full-text review if they met our inclusion criteria, or if it was unclear that they did. The same reviewer (WSR) performed the full-text review. A second reviewer who is an expert in ASC research (JM) cross-checked references which were excluded in this phase. Disagreement was discussed until consensus was reached.

Charting the data

A data extraction template was developed by the team using Microsoft Excel. The form included key characteristics of included studies, such as the population, concept, context, study design and methods, and key findings that were relevant to the review questions. Two reviewers (MS and WSR) performed the data extraction. Due to the heterogeneity of studies and following best practice, the extraction form was piloted and iteratively adapted through discussions between the two reviewers and a third reviewer (JM), who oversaw the extraction process.

During the data extraction, we discovered that two publications [42, 43] reported results from the same study. Another publication [44] was a pre-print version of one peer-reviewed article [45] also included in the review. All publications were included to ensure we utilised the information available, but to avoid duplication of information we extracted information at the study rather than publication level.

Collating, reporting, and summarising the results

There were several steps to collating and reporting the results. We first conducted a qualitative content analysis of the included studies, categorising the papers according to relevant study characteristics, such as study design, population, context, methods of data collection and analysis, and theoretical perspectives. We then worked inductively to identify intended/actualised benefits and outcomes, and barriers and facilitators to implementation raised in the papers. Using thematic analysis, we compiled a descriptive overview of the unique barriers and facilitators identified in the papers, including frequency distributions.

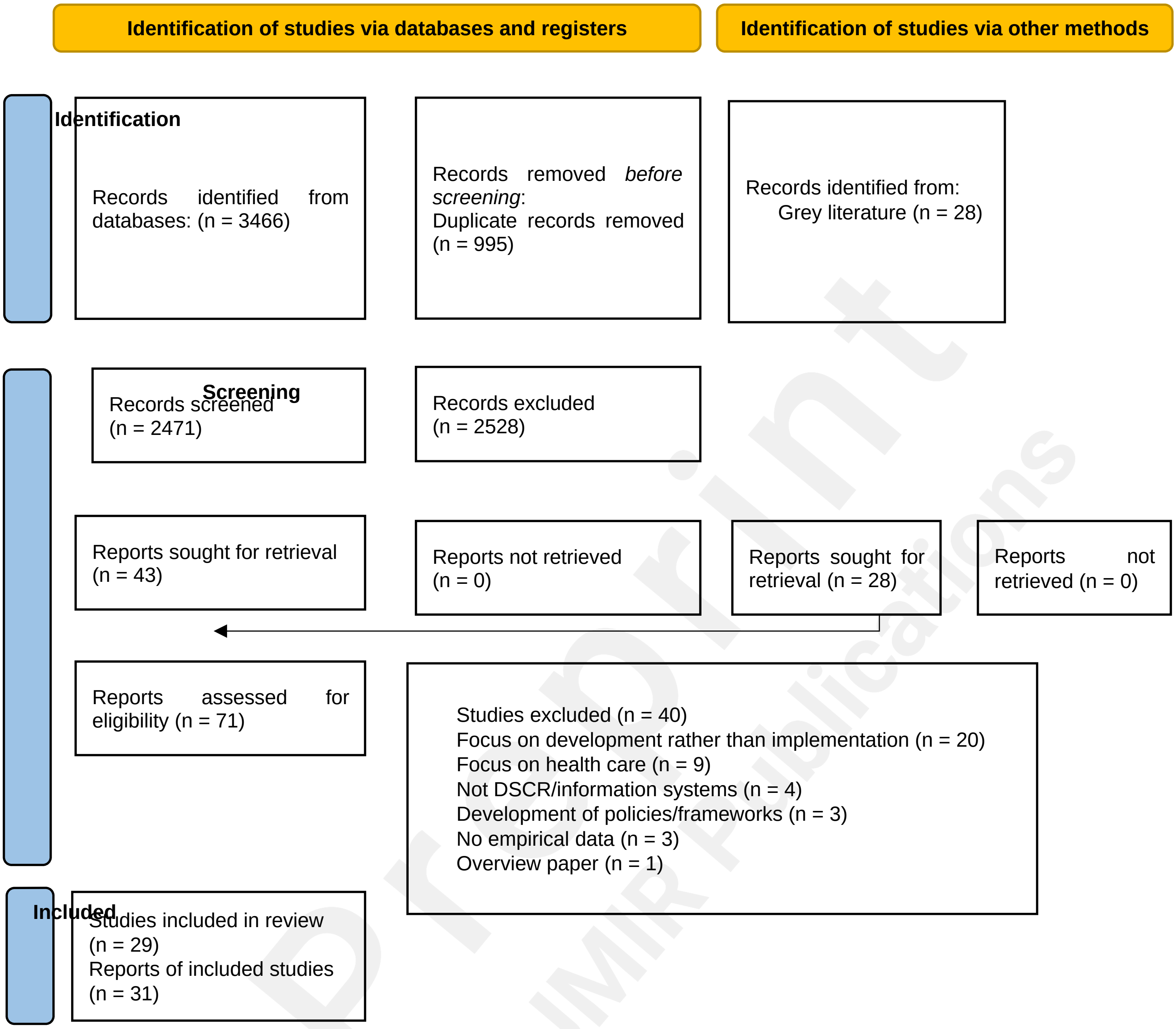
We then used the NASSS framework as a sensitising framework and worked deductively to ensure we had not missed anything of relevance to the NASSS domains. In this process further barriers and facilitators were identified, and these were mapped alongside those identified from the inductive process to the NASSS domains and sub-domains. Where a category was associated with more than one NASSS domain, it was mapped against the domain perceived as most affected.

To synthesise our findings, we then grouped the barriers and facilitators into themes capturing complex aspects of the adoption process. Complexity was determined using the NASSS framework, which defines implementation as simple (few components, predictable), complicated (many components but still largely predictable) or complex (many components interacting in a dynamic and unpredictable way) [46]. The more complexity there is in the system, the less likely the technology is to achieve sustained adoption across the system (and the more likely it is to be abandoned) [46]. The themes draw attention to areas that require greater active management with respect to implementation [25].

Results

Our search resulted in 2473 references, after duplicates were removed. An additional 28 references were identified through the grey literature search, resulting in 2499 references. After screening references based on titles and abstracts, 71 records were selected for full text review, of which 31 references were included from 29 different studies (two pairs of papers reported on the same studies). The article selection process and reasons for exclusion are presented in Figure 1.

Figure 1: Prisma flow chart



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

Study characteristics

Table 1: key characteristics of studies included in the scoping review (n=29).

	Study characteristic	n	%
Study design	Cohort	1	3.4
	Cross-sectional	6	20.7
	Mixed methods	8	27.6
	Qualitative	14	48.3
Country	Australia	2	6.9
	Austria	1	3.4
	Canada	2	6.9
	Finland	3	10.3
	Italy	1	3.4
	Japan	1	3.4
	Sweden	2	6.9
	Switzerland	1	3.4
	United Kingdom	10	34.5
	United States	5	17.4
	Belgium, Czech Republic, and Spain	1	3.4
Study aim	Identification of barriers and facilitators	9	31.0
	Prevalence of use of DSCRs	7	24.1
	Professionals’ perceptions about DSCRs	4	13.8
	Impact of DSCRs on professionals’ work	4	13.8
	Services’ readiness to implement DSCRs	3	10.3
	Strategies to improve DSCRs	1	6.4
	Impact of DSCRs on health outcomes	1	3.4
Setting	Assisted living community	1	3.4
	Care homes	4	13.8
	Continuing/community health care	3	10.3
	Councils	1	3.4
	Home care	5	17.2
	Multi-sector (health and social care)	6	20.7
	Municipal social services	1	3.4
	Nursing homes/nursing facilities	7	24.1
	Social care providers	1	3.4
Population	Older people	6	20.7
	Adults with care needs	2	6.9
	People with dementia	1	3.4
	Not specified	20	69.0
Respondents*	Social care staff	10	34.5
	Health care staff	8	27.6
	Social care managers	8	27.6
	Health care managers	3	10.3
	Users/carers	2	6.9
	Regional stakeholders	2	6.9
	National stakeholders	1	3.4
	Technology providers/vendors	1	3.4
	Not specified	6	20.7
Types of technology	Health records	12	41.4

	Health and social care records	8	27.6
	Social care records	4	13.3
	Interoperability	4	13.8
	Not specified	1	3.4
Theoretical framework used*	The DeLone and McLean Model of Information Systems Success	1	3.4
	The Wang and Strong Quality Framework	1	3.4
	Activity Theory	1	3.4
	Socio-technical Systems Theory	1	3.4
	Computer Supported Cooperative Work	1	3.4
	Design Thinking	1	3.4
	Nolan Stage Model	1	3.4
	Normalisation Process Theory	2	6.9
	Implementation Process Framework	1	3.4
	Unified Theory of Acceptance and Use of Technology	1	3.4
	Not specified/applicable	20	69.0

* Total greater than 100% because some studies collected information with different types of informants

As Table 1 shows, of the 29 studies, ten were carried out in the UK – seven in England [3, 7, 10, 20, 47-49], two in Scotland [43, 45], and the remaining study [50] included multiple UK countries. Five were undertaken in the United States [9, 14-16, 18]. Three were carried out in Finland [51-53], two in Australia [11, 13] , two in Canada [19, 54] , and two in Sweden [12, 55]. The remaining were undertaken in Switzerland [8], Japan [56], Austria [17], Italy [57], or involved multiple countries [6].

Studies in the UK were carried out in care homes (n=3) [43, 45, 47], health and social care organisations/providers (n=4) [3, 7, 20, 48], multiple social care settings (n=1) [50], councils (n=1) [49], and a continuing health care team (n=1) [10]. Over one-third of studies from other countries were conducted in nursing homes/facilities (n=7) [6, 8, 9, 14, 15, 17, 18]. Other settings included home care (n=5) [12, 54-57], care homes (n=1) [13] long-term care facilities (n=1) [11] and an acute care hospital and its neighbouring long-term care home (n=1) [19], assisted living communities (n=1) [16], health centres in Finland (n=2) [51, 52], and social care services (n=1) [53].

Studies investigated several different types of digital care records – from health information technology (HIT) in general (n=4) [18, 47, 54, 56], to EMRs/EHRs specifically (n=12) [6, 8, 9, 11, 12, 14-18, 52, 55]. Some were specific systems commissioned by/developed for local authorities or regions, such as the Aged Care Ecosystem [13], the Edotto regional information system [57], CareFirst [10], the PASSsystem [50] or CareCentric [3], among others. Four studies focused on interoperability [10, 19, 20, 56]. Studies can be grouped into those which aimed to: (i) identify barriers and/or facilitators to the implementation of DSCRs and/or information exchange systems (n=9) [3, 10, 13, 19, 20, 47-49, 52]; (ii) assess the proportion/prevalence of services using DSCRs and/or information exchange systems, and/or how these are being used (n=7) [14-18, 45, 55]; (iii) investigate how digital systems affect the work of care professionals or care providers (n=4) [7, 11, 50, 53]; (iv) assess care professionals' perceptions about the use of digital systems (n=4) [6, 8, 51, 54]; (v) map services' readiness/maturity and/or care professionals' capability to adopt DSCRs and/or information exchange systems (n=3) [9, 12, 42]; (vi) assess potential strategies to improving existing DSCRs or information exchange systems (n=1) [57]; and (vii) assess the impact of use of information communication technology (ICT) on health outcomes (n=1) [56].

To achieve these aims, most studies used a qualitative design (n=14) [3, 6, 7, 11-13, 17, 47-49, 51, 52, 55, 57]. Eight studies used mixed methods [9, 10, 19, 20, 45, 50, 53, 54] and seven, a quantitative design [8, 14-16, 18, 43, 56]. None of the studies which aimed to identify barriers and/or facilitators, to investigate how digital systems affect work routines, or to assess potential strategies to improve digital systems used quantitative methods. Among the studies that aimed to assess professionals' perceptions of digital systems, only one was quantitative [8]. Of those studies that aimed to assess the proportion/prevalence of digital systems, most (n=4) used quantitative methods [14-16, 18]. The study assessing the impact of ICT on health outcomes was also quantitative [56]. The studies that aimed to map services' readiness/maturity varied between qualitative [12], quantitative [42], and mixed methods approaches [9].

Most studies did not use a theoretical framework to interpret their results (n=20) [3, 8-10, 14-17, 19, 42, 45, 47-51, 53-56]. Of those that did, theories included Normalisation Process Theory (n=2) [20, 52], Socio-technical Systems Theory (n=1) [6], the Nolan Stage Model (n=1) [18], an Implementation Process framework (n=1) [13], the DeLone and McLean Model of Information Systems Success and The Wang and Strong Quality framework (n=1) [57], Activity Theory (n=1) [11], Design Thinking (n=1) [12], Computer Supported Cooperative Work (n=1) [7], and the Unified Theory of Acceptance and Use of Technology (n=1) [20].

Key characteristics of all studies included in our review are provided in Appendix 2.

Summary of facilitators and barriers to the implementation of DSCRs

Of the 29 studies, 28 identified facilitators and/or barriers to digital implementation. A total of 45 facilitators and 102 barriers were identified. These were then coded into 32 categories that aligned with the NASSS framework domains. Of these categories, 18 contained facilitators and 24 contained barriers. Note that the total is greater than 32 because some categories contained both facilitators and barriers. The most frequent barriers related to the digital system lacking interoperability (n=10), insufficient funding or financial incentives and high costs of implementation (n=9), and technology not matching the context of use (n=9). Most facilitators were associated with building inter-organisational trust and collaborative relationships (n=5), adequate training (n=5), anticipating, frontloading, and resourcing the work required to clarify information governance (n=4), skilful leadership enhancing an organisation's digital readiness and capacity for change (n=4), and high usability of the digital system (n=4).

Regarding the NASSS framework domains, most facilitators were related to the Organisation (n=24). This was followed by the Adopter System (n=8), the Technology (n=6), the Value Proposition (n=4), the Interaction Between Domains and Adaptation Over Time (n=2), and the Wider Context (n=1). Most barriers were also related to the Organisation (n=52). This was followed by the Technology (n=25), the Wider Context (n=14), the Value Proposition (n=6), the Adopter System (n=4), and the Interaction Between Domains and Adaptation Over Time (n=1). No barriers or facilitators were related to the Condition domain.

The categories containing facilitators and barriers were then organised into five broad themes: (i) the legal and institutional context for holding and sharing data and its effect on ability and willingness to share data; (ii) digital readiness and organisational capacity for change; (iii) using and sharing recorded information within technical constraints; (iv) alignment between care practices and digital recording practices; (v) and differences between what is expected and what is achievable with digital systems.

A summary of how barriers and facilitators identified in each study were mapped to categories, themes, and the NASSS framework domains and sub-domains is provided in Appendix 3. The five themes are summarised in greater detail below.

1. Legal and institutional context for holding and sharing data and its effect on ability and willingness to share data

A key challenge to DSCR implementation related to concerns about information governance, particularly regarding holding and sharing data. These concerns sat within a context of vague legislation and guidance, market competition and conflicting priorities, poor coordination internally and with external organisations, and low levels of cross-organisational trust. Against this backdrop, building trust and adequately resourcing digital change facilitated successful implementation.

Commercial and regulatory context in which care providers operate

Three studies [3, 42, 49], all based in the UK, identified barriers to implementation related to a lack of national regulation and standards, as well as market competition among both social care providers and digital suppliers. Private sector providers raised concerns regarding the commercial sensitivity of data that could expose or compromise their competitive advantage [42]. Vendor lock-in had also become an issue resulting from supplier market competition, with suppliers reluctant to open up systems to share data with other suppliers [3].

On a wider scale, barriers were associated with a lack of regulation and standards that was linked to the UK legal and regulatory context within which providers were operating. The governance and ethics infrastructure around social care data was less developed than the frameworks in place for National Health Service (NHS) datasets, and there was no established system for the governance of care home data, which are held by private companies, care regulators, and health and social care providers [42], which makes sharing data difficult to navigate [42]. Although there has been progress on regulatory and governance issues, councils stated that the new national frameworks and standards to which DSCR suppliers must adhere were ‘silent’ on data and interoperability standards [49].

Inter-organisational trust and relationships

In five studies [3, 9, 42, 48, 49], four of which were UK-based, a lack of trust between providers and other organisations was a barrier to information governance and data sharing. This was largely attributed to competing priorities across health and social care [48]. Clinical and healthcare partners were particularly reluctant to share data with social care [3, 9, 49], which was associated with misunderstandings about what people working in social care do, as well as with concerns about sharing information with staff who are not registered social workers [49]. Among GPs, the combination of holding a large volume of patient data and feeling responsible for confidentiality led to a risk-adverse attitude to sharing data [3].

Four studies [3, 42, 48, 49], all UK-based, found that building trust and collaborative relationships between organisations facilitated implementation. Care homes were more willing to share information when there were well-established and collaborative relationships in place with local authorities [42]. Creating regional ‘data safe havens’ within Scotland was an example of encouraging confidence among professionals that data was handled respectfully, professionally, and securely [42]. These havens, led by trusted partners such as the NHS, academic institutions, and government agencies, represented a centralised approach to managing, storing, and handling access requests to healthcare data that could encourage relationships between health and social care providers.

Ambiguous governance frameworks meant it was important to spend time clarifying information governance requirements and building trust in each other’s systems. In the UK, local authority and provider staff needed to dedicate significant resources upfront to identify and address the challenges associated with ensuring that data handling processes were safe [3]. Setting up information-sharing agreements that specified appropriate data flows between organisations was often intensive, involving unexpected time and effort [3]. This was partly because of the time required to build relationships and engage numerous actors with data sharing plans [3]. However, undertaking information governance work early on in projects facilitated implementation, locating expertise and capacity and building the foundations for trusting relationships across organisations [3]. Leaders who managed to foster these positive working relationships could circumvent organisational barriers by facilitating shared priority setting [48]. Establishing trusting relationships between decision makers also helped senior health and care leaders to overcome barriers stemming from organisational fragmentation [48].

Organisational coordination to clarify information governance

In four studies [3, 9, 42, 48], a general lack of coordination was a barrier to clarifying information governance processes needed to implement digital systems. Division between, and within, organisations created siloed data systems, meaning that residents’ records could be stored in different systems across multiple services [48]. Lack of coordination was linked to information governance professionals, who looked after personal data collected by single organisations, lacking the capacity to pick up additional responsibilities for cross-organisation information governance and data sharing [3]. This was compounded by provider leaders lacking an understanding of information governance [3].

The lack of a shared, standardised understanding of information governance and data ownership across organisations also created confusion among staff. When asked about external data sharing, nursing home leaders in the US [9] raised concerns about transparency and maintaining control of residents’ health data. Transparency was seen as a new concept for nursing homes, with some viewing patient data as belonging to them and describing it as “their” data [9]. For some leaders, a fear of lawsuits was a real concern regarding data sharing [9]. In the UK, there was a lack of shared understanding with confusion about consent, which was related to social care and local government starting from a different position to NHS partners when it came to information sharing [49].

While a lack of organisational coordination was a barrier to implementation, four studies [3, 10, 48, 57] identified facilitators related to anticipating, frontloading, and resourcing the work required to clarify information governance. In the implementation of information systems across home care services in Italy [57], agreements could be reached on hardware and software once information governance had been properly defined. The synergies resulting from integrating information systems from different organisations then positively affected service quality. Prioritising and adequately resourcing the work required to define information governance was therefore a facilitator to data sharing and in turn improved service quality. In another study, health and social care managers also acknowledged that undertaking considerable work together to agree on what could be shared helped to implement a shared electronic record between nursing and adult social care practitioners [10]. While fostering cross-organisational relationships was important, substantial resources were required to develop and sustain these relationships [48].

2. Digital readiness and organisational capacity for change

The importance of investing the necessary groundwork and anticipating the work involved in digital implementation is linked to an organisation's digital readiness and capacity for new technology more generally. Facilitators and barriers within this theme related to hardware and internet connectivity issues, funding issues in the sector, organisational infrastructure, and resourcing the work required for digital change, including leadership and training.

Hardware and internet connectivity issues

Hardware issues were a barrier to implementation in four studies [6, 8, 11, 54] and had negative implications for care quality in two [6, 11]. Hardware issues consisted of a lack of sufficient computers and handheld devices to allow timely documentation of patient data in nursing homes [6, 8], ergonomic-related challenges in home care [54], and poor battery lives on portable devices in home care [11, 54]. In Australia, residential aged care nurses and care workers were forced to rely on memory when portable devices ran out of battery during medication rounds, which reduced patient safety [11]. A cross-country study of EPRs in nursing homes also found care quality was impacted when staff needed to share devices, which prevented them from having timely access to updated care plans and the whereabouts of their residents [6]. Hardware issues implied a failure to commit the upfront investment needed to install the hardware required to successfully implement digital systems, reflecting a lack of organisational capacity and readiness [11, 54].

Internet connectivity issues were a barrier to implementation in five studies [13, 42, 47, 54, 55]. Adequate internet was often highlighted as prerequisite for going digital, and poor connectivity was indicative of organisations not having the resources required to successfully implement digital systems. This was a barrier in home care, where connection depended on inconsistent mobile internet access [54, 55]. It was also an issue in care homes when facilities were old buildings with poor Wi-Fi connection [13, 47]. For example, a project in southeast Scotland found that 18% of participating care homes regularly experienced internet service interruptions, while 27% only had internet access in parts of the building [42].

Funding issues in the sector

Insufficient funding or financial incentives and high costs were a barrier in nine studies [3, 9, 14, 16, 18, 47-49, 55]. Four of these studies were based in the US [9, 14, 16, 18], four in England [3, 47-49], and one in Sweden [55]. Particularly in England, the prevalence of short-term over long-term funding for digital social care projects was felt to push organisations towards implementing digital solutions that lacked ambition and long-term considerations [3]. The failure to anticipate the financial resources needed to both implement and sustain digital transformation constrained the scale of change and prevented it from being embedded.

Where funding was available, finding, requesting, and receiving it was not always straightforward [47]. Problems for small care homes in England included insufficient communication from funders, difficulties obtaining information about opportunities, complicated application procedures, and not receiving funding in a timely manner [47].

Organisational infrastructure and resourcing the work required for digital change

Barriers to implementation that related to organisational infrastructure were identified in five studies [19, 20, 47, 48, 55]. They included staffing issues, such as insufficient ICT [47] and human resources staff [55], and high senior staff turnover [48]. They also involved suboptimal internal communication structures that left staff unaware of implementation [19, 20], and inadequate leadership from management [20]. One study in England [3] outlined facilitators that involved organisations adequately clarifying and resourcing digital change work. Creating an upfront plan of how to maximise the limited resources to be invested in digital projects was key to successful implementation [3]. For example, deploying resources in a phased manner when managing the digitisation of patient notes demonstrated to commissioners that sites could competently manage digital change despite limited resources, making it easier to secure further funding [3].

Facilitators in four studies [3, 10, 49, 52], three of which were based in England, related to the importance of skilful leadership in enhancing an organisation's digital readiness and capacity for change. In England, [3] it was important to identify leaders with the appropriate skillsets to develop and manage large-scale digital projects. The type of leadership required depended on context, with some providers preferring leaders who could balance risk and reward in deploying resources, while others sought leaders who were respected by their peers to help foster engagement among staff [3]. In England, skilful leadership was also associated with senior staff functioning as 'change agents' able to motivate practitioners to review and appraise their working practices [10]. At a wider level, English councils with success in implementing data standards and interoperability had strong support from leadership [49], with directors of social care, chief information officers and elected members all valuing digital ways of working and delivering joined-up care [49].

Adequate training

Absent or inadequate training was a barrier to implementation in four studies [6, 19, 20, 47]. Issues included a lack of training tailored to technological competence [20] and inappropriate training content [19]. Conversely, five studies identified high-quality training as a facilitator [3, 6, 11, 48, 52]. One multi-country study identified both facilitators and barriers across the different contexts [6]. Generally, successful training was tailored to practitioners' technological skills and work tasks [6, 52]. Types of training regarded as most useful by professionals included 'on-the-job', context-specific training rather than classroom-based teaching [6], ongoing training rather than one-off sessions [54], follow-up visits from trainers [52], and continued onsite support from suppliers [6, 11]. This evidence suggests that high-quality training, which supports the alignment of care practices with the new practices required by digital systems, is tailored, targeted and practical.

3. Using and sharing recorded information within technical constraints

Sharing recorded information within technical constraints included issues with the technical interoperability of digital systems, their level of usability and user-friendliness, and the extent to which they had been appropriately adapted for social care from other settings, which were often acute or primary care.

Interoperability

Interoperability is understood as a technology's capacity to electronically share patient information between different systems and to use the information that has been shared [58]. A lack of interoperability was identified in ten studies as a barrier to sharing recorded information [3, 6, 9, 15, 17, 42, 48, 49, 51, 53]. In the US [15], the absence of interoperability was the most common barrier to sharing clinical information in nursing facilities, being reported by 57% of 491 respondents in facilities with EHRs. Care professionals and managers in Finland [51] also criticised information systems for not always 'communicating' with each other. This sentiment was echoed by senior health and care leaders in England [48]. While providers were adopting digital solutions, these were not necessarily increasing interoperability and risked creating new data silos [15].

In some studies, interoperability barriers were attributed to the multitude of systems being used by different organisations. Across nine nursing homes in Austria [17], managers were exchanging information with at least 18 other organisations, the majority of which were not part of the same EHR system. Analysis of a national survey revealed that, while 95% (775/815) of US nursing homes had EMRs, only 46% (373/815) had some capability for information exchange with other organisations. The variety and sheer number of systems used by different providers was a concern for 8 out of 12 staff members in subsequent interviews [9].

In England [49], interoperability issues presented as systems being unable to store identification data such as the NHS number. However, local authorities were often unaware at the procurement stage about which digital options could store such information. There was also confusion amongst both councils and suppliers about the possibilities and limitations of NHS number tracing. This was linked to a lack of organisational readiness and capacity in terms of providers not knowing which technological features they needed when choosing a system [49]. It also linked to the downstream value suppliers promised providers in terms of being transparent about what their products could offer [49].

Staff in all three nursing homes in a multi-country study also complained that the EPRs lacked interoperability and options to adjust features to meet specific needs. This implied a contradiction between customisability and interoperability, with customisable systems more likely to meet care provider needs but less likely to be compatible with other systems than off-the-shelf technology [6].

Usability and user-friendliness

Barriers related to a lack of usability and user-friendliness were identified in eight studies [6, 11, 12, 50, 51, 53-55], three of which [51, 53, 55] were based in Nordic countries. These barriers were more closely associated with using, rather than sharing, recorded information within technical constraints.

Key issues were linked to system speed and crashes, and inefficient user interfaces. Four studies [50, 51, 53, 54] found problems with the system being slow, crashing, and/or having unscheduled downtime. Others pointed to features that made staff work routines more inefficient, such as the example from US home care nurses needing to click 22 times to get into each individual's medical record, a cumbersome process that had to start again when they moved onto the next patient [12]. In a multi-country study, care home staff disliked being forced to enter narrative text into the EPR and preferred drop-down menus [6]. An inefficient information retrieval process within an Australian EHR system meant that staff in long-term care facilities had to perform lengthy manual searches to identify wound charts, with the system also failing to alert them if they were duplicating charts that already existed [11].

In five studies [8, 11, 13, 20, 54], high usability and/or usefulness of the digital system facilitated implementation. In three cases [13, 20, 54], systems offered easy access to information that improved the immediacy of care provision and/or documentation. In some cases it improved the accuracy of care documentation, either through enhanced information visibility [13, 54] or automating tasks that were previously manual and carried the risk of human error [11]. Digital systems with flagging features also supported resource prioritisation and subsequent management decisions [13]. These facilitators aided implementation by increasing task efficiency and supporting the knowledge generated or made visible by the technology, improving data accuracy and decision-making.

Adapting technology from other settings

Barriers in five studies [6, 20, 45, 53, 55] related to digital systems that had been maladapted from other settings and were consequently deemed inappropriate for social care. In England, social care workers were less likely to perceive HIE systems as useful compared to healthcare workers and experienced issues with the user interface [20]. Staff noted that the system looked unfamiliar compared to other systems they used, as the HIE was primarily designed for acute and primary care settings, without considerations made for social and community services [20].

An Australian study [13] reported successful adaptation of a digital system originally designed for an acute hospital setting to a care home. The study describes a co-designed implementation process involving staff at all levels, residents and their relatives that helped to make the product appropriate for the care home setting [13]. This process facilitated implementation and increased the likelihood of success.

4. Alignment between care practices and digital recording practices

Barriers related to digital systems generally not matching the context of use were identified in nine studies [3, 6, 7, 12, 45, 49, 53-55]. They referred to misalignments between care practices within the social care sector and recording practices demanded by new digital systems. Additionally, digital systems were often found to reduce interactions between clients and practitioners, conflict with the way that practitioners preferred to input data, and exacerbate organisational issues care providers were already experiencing. Staff perceptions of improved care quality increased the likelihood that they would accept the technology.

Care quality and the relational nature of social care

Barriers that involved digital systems decreasing the relational nature of social care work were highlighted in five studies [6, 7, 9, 48, 51]. Problems arose when care staff experienced disruption to their relational work and viewed the technology as depersonalising care. In Finland, new information systems caused undesirable ‘reallocations’ of work, with increased technical and information system tasks replacing relational tasks performed physically close to clients [51]. An English study [7] reported how digital care records influenced and shaped the nature of the clinical encounter for occupational therapists. By design, they necessitated a focus on data collection and adherence to standard procedures and risk management, thereby lessening opportunities to build rapport and therapeutic relationships with clients [7]. Concerns existed elsewhere that using technology close to clients was intrusive and would reduce care quality [6, 54]. Defining the problem as a preference for ‘high touch’ over ‘high tech’, in the US five out of 12 nursing home leaders feared that technology might deter from, rather than enhance, the personal experience they strived to give residents and their family members [9].

In other cases, features of the technology, such as data fields, were found to impose work routines that prioritised clinical data and processes. Care home managers in Scotland commented that existing data systems prioritised the recording of care tasks, fuelling a task-oriented culture rather than one focused on resident/relationship-oriented care [45]. Pre-scripted data fields also limited the recording of social/emotional activities and care provision, leading to the data about care homes, residents and their families being overly clinically focussed [45].

Only one study found the digital system to align well with the relational nature of social work, which facilitated implementation [13]. Using a co-design process with input from staff and residents to install an Aged Care Ecosystem in an Australian residential home meant that the technology enabled staff to multitask and so spend more time with residents. This linked to perceived time savings and improved care quality, encouraging both residents and staff to accept the system [13]. For example, managers commented that the technology aligned care more closely with resident needs, providing prompts in relation to straightforward tasks such as repositioning a resident [13].

In England, two studies found that perceived care quality improvements increased staff acceptance of digital systems [3, 20]. Translating the value of the technology for different professionals led staff to ‘buy into’ digital change [3]. While administrative staff were the first to adopt anything that they viewed as saving time, practitioners adopted a technology based on how it would impact care [3]. The potential benefits for care quality were also highlighted by staff in another study [20], with perceived improvements to patient safety increasing the likelihood that staff would adopt the digital system.

Pre-existing organisational problems

Barriers in two studies [12, 19] related to the digital system exacerbating pre-existing organisational problems, such as the high quantity of communication channels that nurses had to navigate in different parts of home care organisations [12]. Due to the lack of standardisation, home care nurses needed to adapt to others’ ways of organising their communication, having to contact physicians through primary care nurses or by fax. They often only discovered that their request had reached doctors through changes made to patients’ medicines [12]. Rather than alleviating this issue by standardising processes, the new digital system introduced new communications channels. While this issue was experienced at the surface level as inappropriate technology, it was rooted in inefficient and cumbersome work routines that predated the technology’s introduction.

Conflicts between data recording practices and digital systems

In four studies [3, 7, 42, 49], all based within the UK, barriers related to conflicts between the way that care providers preferred to record data and the way that the technology permitted data to be recorded. For example, the lack of systematic data collection in care homes made it difficult to capture the full complexity of care for individuals with multiple long-term conditions and high support needs [42]. Often, frontline practitioners also preferred to input information as narrative text, while digital systems usually emphasised coded data entry [3, 49]. In one case, social workers were inputting information in free text as opposed to coding into forms, meaning that some records held information about third parties who had not consented to sharing their data [3]. Such issues were associated with a lack of understanding across social care as to the importance of data quality [49]. They required retraining on the importance of collecting only necessary information about third parties [3] and improved recording practices [49].

Rather than a lack of understanding requiring training, an English study found that the conflict between recording preferences and what digital systems permitted was due to a mismatch between digital care records and the concerns of occupational therapy [7]. Therapists could not record their interventions, and instead had to translate, or recode, information to fit the structure and demands of the system [7]. The issue in this case was attributed to the digital system not fitting the needs of the sector, as opposed to poor recording practices.

5. Differences between what is expected and what is achievable with digital systems

The final theme related to differences between what organisations expect from digital systems and what they can realistically achieve. While guidance on available technology was often inadequate, care providers themselves lacked internal consensus regarding what the technology was capable of and what they wanted to gain from its implementation. Creating a shared digital vision and adopting digital systems as part of wider cultural changes facilitated implementation.

Guidance on the technology available

Insufficient guidance on the technology available was a barrier in one study in English care homes [47]. An overwhelming availability of suppliers for care providers to choose from was described as an ‘unregulated tech product maze’ [47]. This was coupled with a lack of guidance to help choose the best option and minimise the risk of paying for unsuitable technology [47]. Care homes criticised NHS England’s ‘Assured Suppliers List’ of DSCR suppliers, which was introduced to aid decision-making [47]. Although suppliers on the list met a set of standards, some care homes complained that suppliers did not fit their needs and requirements, while others reported poor experiences with suppliers on the list and were locked into contracts despite consistent software malfunctions [47].

A shared digital vision

Creating a shared vision related to the importance of making collective sense of the technology and building an organisational consensus regarding its potential while being realistic about limitations. Four studies [3, 17, 20, 51] found barriers in this area, with care provider staff lacking consensus internally as to the purpose of digital systems. There was poor awareness regarding the potential benefits for care delivery and tensions between two distinct staff groups with different cultures and expectations [3]: a technical and managerial culture that often initiated digital change projects, which was primarily interested in the information captured by digital systems; and a clinical culture concerned with how technology could help deliver care. Professionals in the latter group were sceptical of changes to practice that lacked certain kinds of evidence [3]. While managers generally held a more positive view of implementation, they lacked awareness of some of the negative effects on their employees’ work [51]. Staff also hoped for benefits that the technology was unlikely to be capable of fulfilling [17] and lacked awareness of the technology’s value [20].

Two studies found facilitators to creating a shared vision [13, 52]. They highlighted the importance of co-design and inclusive implementation by gathering suggestions from staff, residents, and their relatives [13], or by conducting monitoring based on staff’s feedback to system developers [52]. Involving different groups as partners in the process enabled the organisation to envision a digital system that benefitted everyone, engaging diverse actors to create an environment that was conducive to successful implementation [13]. Professionals praised practices that helped them make sense of a new service, of which comprehensive and continuous communication played a key role [52]. This was supported by information being delivered via multiple channels so that it reached as many employees as possible, including shift workers [52].

Implementing digital change as cultural change

Framing digital implementation as a cultural change programme emerged as a facilitator in three studies [3, 10, 13]. In an Australian care home, the combination of co-designing the system, establishing a shared vision across all levels, and providing training and feedback loops instigated a culture change that improved service delivery and problem-solving, thereby supporting digital implementation [13]. In England, barriers to scaling digital changes in health and social care were mitigated by treating them as part of a wider technology-supported clinical transformation programme, rather than an ICT project [3], or as part of a larger cultural change programme to improve administrative efficiency [10].

Summary of intended and actual outcomes

Table 2: intended and actual outcomes (n=17).

Theme		n
Intended outcomes	Improved quality of data records	2
	Improved information sharing	2
	Improved information accessibility	2
	Improved efficiency	1
	Time savings	1
	Improved care quality/planning	1
	Improved communication/collaboration	1
	Improved information accuracy	1
	Space savings (less paper)	1
Actual outcomes	Improved efficiency	8
	Perceived time savings	7
	Improved information accessibility	5
	Workarounds (viewed negatively)	4
	Improved communication/collaboration	3
	Improved information security and risk management	3
	Additional time burdens	3
	Improved care quality/planning	2
	Increased face-to-face work with patients	2

	Improved information sharing	2
	Improved information accuracy	2
	Improved transparency and accountability	2
	Increased staff/patient satisfaction	1
	Workarounds (viewed positively)	1
	Decreased communication/collaboration	1
	Decreased efficiency	1
	Decreased care quality	1
	Decreased face-to-face work with patients	1
	Lack of financial benefits	1
	Rationing care documentation	1

Outcomes of digital implementation, either intended or actual, were identified in 17 studies [7-11, 13, 17, 19, 20, 47, 49-51, 53, 54, 56, 57], although they were the focus of only one study [56]. The full details of benefits and outcomes can be found in Table 2.

Three studies [9, 17, 47] identified the outcomes that participants hoped to achieve through adopting digital systems. Improved information accessibility, information sharing, and quality of care records were identified in two studies [17, 47], making them the most frequent intended outcomes. Examples of the improved quality of records included more complete and readily available patient-related information, and less documents being lost during patient transitions between different institutions [17]. Improved efficiency [17] and time savings [47] were identified as intended outcomes in one study respectively.

Interestingly three studies [9, 47, 49], two of which were based in England [47, 49], cited a lack of awareness about the benefits of digital systems for social care, or concerns that they would not benefit the sector. In England, information sharing initiatives were often focused on healthcare services and hospitals, with less attention paid to the potential benefits for councils or social care [49]. This made it difficult for social care staff and care home residents to see the benefits that digital systems could bring [47].

Thirteen studies identified positive outcomes realised through digital record implementation [7, 8, 10, 11, 13, 19, 20, 49-51, 54, 56, 57]. Improved efficiency was the most frequent actual outcome (n=8) [10, 11, 13, 19, 20, 49-51], achieved through the automation of previously manual processes [11], reduced duplication of procedures [20], and the increased availability [19] and immediacy [13] of information improving decision-making and care planning. These outcomes were associated with increased staff capacity [49] and productivity [51]. Impacts on efficiency were not always clear. In one study [11], while automatic data entry in patient records was beneficial, the system did not completely align with work processes and staff needed to record some data twice.

Perceived time savings were also reported in seven studies, although findings were not clear cut [10, 13, 19, 20, 49, 51, 57]. Some studies reported staff spending less time retrieving and documenting information for decision-making [13, 57] and chasing other organisations for patients’ whereabouts [49]. One study found time savings of up to 45 minutes for long-term care staff when completing medication reconciliation [19]. However, two studies found time savings in some areas and additional time burdens in others [10, 51]. In one case, disagreements between managers and their staff arose regarding whether the digital system created time savings [51]. Managers and employees agreed that moving from phone calls to digital messaging had reduced workloads and freed up staff time for other tasks [51]. However, employees felt that the new tasks required extra time that was not always recognised by management nor given additional resources, such as responding to clients through messages [51].

Five studies [8, 13, 19, 20, 51] found that digital systems made information more accessible. In one case, this enabled person-centred care, with easily accessibly information on individual backgrounds helping staff to ‘see the person first and the diagnosis second’ [13]. In another, improved visibility of information facilitated medication tracking and therefore supported patient safety [19]. Three studies also highlighted improved communication and/or collaboration [10, 51, 54] and improved information security and risk management [50, 51, 57]. Electronic information sharing permitted greater involvement in partnership working, enhancing collaboration and improving the timeliness, efficiency, and quality of care [10, 51, 54]. Improved information security and risk management were linked to secure information transfer and storage [50, 51, 57], better client monitoring [51], and increased data accuracy [50, 57].

Workarounds, identified in five studies [7, 9, 11, 53, 54], were the most common negative outcome of implementing digital systems. Workarounds involve the implementation, by end-users, of temporary practices or behaviours to overcome limitations of a technological system [59]. Staff developed workarounds for various reasons. These included finding ways around the system to share health data with residents [9] and access case-based information [53]. While workarounds could be beneficial [7] and support task completion [53], they also threatened data security [53].

Discussion

This study set out to understand what is known about the implementation of digital records in adult social care settings. The literature was diverse in terms of the type of digital system, setting, and use case studied. Most of the 29 studies used a qualitative design (n=14), particularly those looking at facilitators and barriers, how digital systems affect work routines, and potential strategies to improve digital systems. Studies were most frequently based within the UK (n=10).

Most studies focused on facilitators and barriers to digital implementation. Given the high number of barriers and facilitators identified, complexity appears to be centred in this area. Many facilitators and barriers interlinked and were associated with multiple NASSS framework domains, which consequently compounded the complexity of implementing digital systems. The five themes we identified using the NASSS framework also indicate that these are particularly complex areas that require more active management and consideration when implementing DSCRs in social care contexts.

While our findings suggest that implementing digital systems is an inherently complex process, this review did identify some strategies to manage this complexity, which could constitute ‘good practice’. In terms of digital readiness and organisational capacity for change, high-quality training was found to increase implementation success. Where training was tailored, practical and ongoing, it supported the alignment of care practices with the new practices required by the technology, thereby increasing employees’ ability and willingness to adopt and continue to use the system. Although bespoke and continuous training depended upon care provider leaders anticipating and committing financial resources, it seems a worthwhile investment for successful digital implementation. This finding echoes the results from a previous scoping review, which highlighted training as a key factor influencing the use of EISs [23].

Implementing digital systems as part of wider cultural change projects was another example of good practice that addressed multifaceted complexity. A striking example of this was the project in which implementation was co-designed with staff [13]. This approach enabled a shared vision of the technology to be created across the care home, among residents and staff at different levels. The sense of ownership this instilled addressed complexity in the adopter system domain, with all users more likely to support the technology and view it as ‘business as usual’. Co-design also addressed complexity in the technology domain, with the digital system more likely to align with the needs and practices of its user group. While incorporating digital implementation as part of broader transformation required significant resources, where there was sufficient organisational readiness and capacity for comprehensive rollout, implementation seemed to have greater potential for sustainability, scaling and spread.

Complexity related to data sharing and information governance seemed to be more difficult to address. Trust and relationship building across organisations could help establish data sharing agreements at a localised level and therefore address complexity within the organisation domain. However, fundamental barriers were associated with complexity in the wider context domain, i.e., around regulations and standards, over which social care organisations had no direct control. Until there is primary or secondary legislative change, the governance and regulatory context will continue to impede cross-organisational data sharing efforts.

Although 17 studies identified intended or actual outcomes, they more often focused on identifying facilitators and barriers to implementation. Improved efficiency, accuracy and time savings were the most common positive outcomes realised through digital adoption, while workarounds and additional time burdens were the most frequently cited negative outcomes. Some of the positive outcomes reflect the results of Greenstock’s literature review [22], which also found efficiency and productivity to be a key benefit of DSCRs. However, the limited detail in outcome reporting and variations in the extent to which different benefits are observed in practice suggest that this topic would benefit from future research. Specifically, there seems to be a need for studies that both quantify outcomes and pay greater attention to the necessary conditions for positive benefits to be realised.

Limitations

Most studies lacked a clear theoretical or methodological framework (n=20). This meant it was often unclear which type of digital system or record was being implemented, as well as the context, setting, and use case. Some digital systems were simply described as ICT, electronic digital systems or HIT [18, 54, 56], or digitalisation or digital change generally [3, 47, 51], without definitions of these terms. In some cases, studies appeared to use the same vocabulary to describe different systems. However, this was hard to determine as most studies did not specify their target population clearly (n=20). Future studies should pay greater attention to how they report which digital systems were implemented, the target population for the system, the setting, and the roles of the professionals involved to enable comparisons to be made between studies. Standardised reporting guidelines, such as the template for intervention description and replication (TIDieR) checklist and guide [60], may facilitate describing digital implementation projects/systems.

Only two studies included carers/service users as respondents, while most included staff (n=18) or managers (n=11). Future research may therefore benefit from incorporating the perspectives of people drawing on care to cover this gap in the literature.

Due to the prevalence of qualitative designs and a lack of clear theoretical or methodological frameworks among the studies reviewed, we decided to use the NASSS framework as a structured approach to categorising and interpreting heterogenous data. As this was a rapid review, the framework functioned as a tool that focused our data interpretation and triangulation, particularly given the high number of barriers and facilitators and the diverse ways issues were described in different studies. For example, it focused our analysis of hardware and internet connectivity issues. While the studies reviewed often attributed these to problems with the technology itself, the framework enabled us to trace the associated complexity back to the organisation domain, with care providers lacking the readiness, awareness, and capacity to prepare for digital implementation and adopt appropriate systems.

However, the NASSS framework carried some limitations for our analysis. We found the condition domain to be irrelevant for this review, with no facilitators or barriers associated with this domain. While the framework was developed for both health and social care, the focus of this domain on comorbidities and clinical aspects of a patient's condition may be more appropriate for healthcare technologies. For social care technologies, it may be more useful to approach the condition domain in terms of whether digital systems are appropriate for particular groups of clients, such as older people or people with learning disabilities, rather than specific illnesses or diseases. Equally, the lack of relevance of the condition domain may reflect limited attention to diversity and inclusion considerations within the studies reviewed. A second limitation of the NASSS framework related to the final domain (interaction between domains and adaptation over time). As most of the complexity we identified was multifaceted, we found it more useful to iteratively analyse the interactions between domains instead of restricting them to this one domain. Rather than viewing complexity as belonging to separate domains, we suggest using this final domain to provide an overarching perspective of how complexity constantly intersects and interacts across domains at every stage of digital implementation.

Despite the limitations, our review provides a comprehensive picture of the state of the literature on DSCRs. This builds on four previous reviews which, when taken together, captured the literature about digital records until the end of 2017 [2, 21-23]. Our review has updated and added to these findings, in that it covers both academic and grey literature up until 2023 and utilises a robust theoretical framework to draw out complexity in terms of sustainability, scaling, spread, non-adoption, and abandonment.

Conclusion

Our findings suggest that the implementation of digital care records is particularly complex due to the lack of a common language and consensus about what DSCRs should look like, as well as expected outcomes and impacts. This is reflected in the scientific literature, which often lacks operationalisation of key constructs and robust study designs. To be successful, implementation should consider complexity, while studies should use a robust theoretical framework, and employ mixed methods or quantitative designs where appropriate. We also suggest that future studies define the target population, consider gathering data on the experiences of carers/service users, and focus on digital care records specifically being used in social care, such as DSCRs.

List of abbreviations

ASC: adult social care

DSCR: digital social care record
EHR: electronic health record
EIS: electronic information system
EMR: electronic medical record
EPR: electronic patient record
GP: general practitioner
HIE: health information exchange
HIT: health information technology
ICT: information communication technology
NASSS: nonadoption, abandonment, scale-up, spread, and sustainability
NHS: National Health Service
PRISMA-ScR: preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews

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Supplementary Files

Multimedia Appendixes

Search strategies.
URL: http://asset.jmir.pub/assets/d5d38084ec038c5acbc95c6bd35e50e3.docx

Characteristics of included studies.
URL: http://asset.jmir.pub/assets/0afd132162accb32a2708dd7afa39b57.docx

Thematic analysis of facilitators and barriers using the NASSS Framework.
URL: http://asset.jmir.pub/assets/2f5d011b36671ef39842c0b1f87457dc.docx