



# Framework for Selecting Digital Health Maturity Assessments

GDHP Evidence and Evaluation Workstream

September 2025 (updated March 2026)



# Acknowledgements

The GDHP would like to thank the Co-Chairs of the Evidence and Evaluation work stream, Dr Tamara Sunbul (Saudi Arabia) and Mr Peter O'Halloran (Australia) for engaging GDHP participants in discussions, meetings, and other activities to drive and develop this work. The GDHP would also like to thank countries who participated in the Evidence and Evaluation work stream discussions and thank the countries and organizations who contributed information and research support to this paper, and who participated in the survey. We hope that this report provides both participant and nonparticipant countries with guidance on the use of digital health maturity assessments. Finally, the GDHP would like to thank Dr Vanessa Cheng, Georgiana Bingham, and Tracey Davenport (Australia) for contributing to the writing of this research paper.

This document was updated on March 26, 2026. Minor textual corrections were made to Table 9, and minor formatting corrections applied throughout.

## **ABOUT THE GLOBAL DIGITAL HEALTH PARTNERSHIP**

The Global Digital Health Partnership (GDHP) is a collaboration of governments and territories, government agencies and the World Health Organization, formed to support the effective implementation of digital health services.

Established in February 2018, the GDHP provides an opportunity for transformational engagement between its participants, who are striving to learn and share best practice and policy that can support their digital health systems. In addition, the GDHP provides an international platform for global collaboration and sharing of evidence to guide the delivery of better digital health services within participant countries.



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## i. Note from the Evidence and Evaluation Workstream chairs

Digital health maturity is no longer a technical exercise; it is a strategic lever for health system resilience, equity, and accountability. As governments navigate increasing expectations for value, efficiency, and patient empowerment, the ability to measure and benchmark digital readiness becomes essential to responsible investment and policy alignment.

In this paper, the Evidence and Evaluation Workstream of the GDHP has undertaken a comprehensive review of existing digital health maturity assessments, analysing the levels at which they are applied and the specific areas they evaluate, referred to as meta-domains and sub-domains. This has been further strengthened by insights from an international survey of GDHP member countries, highlighting not only what is currently valued in maturity models but also what is needed next.

This paper reflects the collective intelligence of GDHP members and sets the foundation for a shared, evidence-based maturity framework that can inform both national digital transformation strategies and broader global policy harmonization efforts. By understanding where current models converge and where they fall short, we are better positioned to shape the next generation of maturity assessments that reflect real-world health outcomes, patient experience, contextual relevance, and sustainability objectives.

We extend our sincere appreciation to all GDHP participants who contributed to the research and review stages of this work. We would also like to acknowledge the work of Dr. Vanessa Cheng, Tracey Davenport, and Georgiana Bingham for their work in developing and conducting the literature review, developing and administering the survey, and writing the report. We invite member countries and partners to leverage this paper as a reference point for future alignment across WHO, OECD, and GDHP policy instruments, ensuring that digital maturity becomes a driver of global health system transformation rather than simply a measurement exercise.



Dr. Tamara Sunbul



Mr. Peter O'Halloran

## ii. Executive summary

The benefits of using digital technologies in healthcare depend on how well they are integrated into a healthcare organization or system. This level of integration is known as digital health maturity.

Many countries and organizations have come up with frameworks which purport to assess the strength of a country's digital health maturity. After a literature review of both academic and grey literature, all known digital health maturity assessments were compiled and analysed for the various elements (referred to in the paper as 'meta-domains' and 'sub-domains' comprised in them.

The following meta-domains were identified during the review:

- 1) Leadership, strategy, policy and guidance
- 2) Infrastructure, operations, and financial management
- 3) Data and analytics for health
- 4) User attitudes, capability, adoption and feedback
- 5) Quality improvement and outcome tracking

All digital health assessments were then scored on the presence or lack of the meta-domains and sub-domains within their frameworks, to give a comprehensive overview of the suitability of any given digital health assessment for a system.

The review of the digital health assessments was then supplemented by an international survey of 26 GDHP member countries, who reported on which assessments were to their knowledge in use in their countries, and what exactly they were used to measure. They also provided information about what countries looked for in digital health assessments, with local knowledge being highly prioritised.

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# 1 Introduction

Since the start of the COVID-19 pandemic in late 2019 and early 2020, there has been an accelerated integration of digital technologies into healthcare management and services worldwide. This process, known as digitalisation, has significantly transformed healthcare delivery.

The Evidence and Evaluation workstream of the Global Digital Health Partnership (GDHP) has previously published a series of white papers including about measuring the benefits of digital health, recommending development of a globally standardised approach (Global Digital Health Partnership, 2022). The benefits of using digital technologies in healthcare depend on how well they are integrated into a healthcare organization or system. This level of integration is known as digital health maturity.

The aim of this paper and the research artefacts that accompany it is to provide a resource for assessors intending to conduct digital health maturity assessments. These resources are not intended to be prescriptive but provide guidance on which digital health maturity assessment may be the most suitable for particular use cases.

These resources build on the previous contributions of the workstream by:

- Extracting and defining the key evaluation domains of interest that are shared across digital health maturity models
- Proposing a framework for evaluating digital health maturity assessments
- Listing and evaluating (in line with the proposed framework) various digital health maturity assessments that exist worldwide.

This research paper describes a proposed digital health maturity assessment framework. This framework lists model or assessment attributes that may influence assessment selection and the key evaluation domains grouped into meta-domains and sub-domains. These were extracted from digital health maturity assessments identified during our research. We propose definitions for each attribute and evaluation sub-domain. We also propose evaluation breadth ratings that indicate how much of a meta-domain are included in the scope of an assessment. Finally, this research paper provides an abbreviated table that lists all included digital health maturity models. This table details the assessment levels, health sector coverage and evaluation breadth ratings of each digital health assessment.

## 1.1 Digital health maturity and its significance

In this research paper, the term “digital health maturity” refers to the extent to which digital technologies are used to support the provision of high-quality health care and to support improvements to health service delivery and patient experience (Duncan, Eden, Woods, Wong,

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& Sullivan, 2022; Martin, et al., 2019). Importantly, digital health maturity includes the maturity of a healthcare system's digital health technologies, such as information technology (IT) infrastructure and interoperable systems, as well as the maturity of the processes and capabilities involved with the implementation and use of these technologies. These processes and capabilities can include leadership and policy, governance, quality improvement, operations and the ability of the health workforce and consumers to engage with digital health systems.

Digital health maturity is an emerging field, but research suggests that more advanced digital health maturity is associated with improved delivery of care (Snowdon, Hussein, Olubisi, & Wright, 2024; Woods, et al., 2023). A study of 1,048 U.S. hospitals found that higher digital health maturity was linked to better patient experiences compared to lower maturity levels. This includes hospital cleanliness, communication with nurses and doctors, and communication about medications (Snowdon, Hussein, Olubisi, & Wright, 2024). In large hospitals, high digital maturity scores were associated with improved communication about discharge information, better staff responsiveness and improved care transition. In large and medium hospitals, high digital maturity scores were associated with better overall patient experiences and a higher likelihood to recommend the hospital. The yearly 'Digital Health Most Wired' survey conducted by The College of Healthcare Information Management Executives (CHIME) International tracks these outcomes across the United States and internationally. An Australian based study found healthcare sites with high digital health maturity reported that services such as telehealth and patient data tracking improved patient access to, and the quality of, care (Woods, et al., 2023).

It is important to note that the measure of digital health maturity evolves with advancements in the wider digital landscape. This means that health systems considered to have achieved "digital excellence" (Krasuska, et al., 2020) today may be considered to have average or poor digital maturity in the future. It is also worth noting that when applied on a fragmented or isolated facility level basis, digital health models may give a misleading impression of the overall strength of digital maturity in each country.

## 1.2 Purpose of measuring digital health maturity

Digital health maturity assessments have been developed and deployed to support the following activities:

- Assessing a system's digital maturity and developing strategies for improvement
- Providing a structured roadmap for digital health transformation
- Informing national and organizational digital transformation strategies
- Applying for targeted funding; for example, by providing a framework for structuring proposals
- Allocating funding; for example, against identified priorities or by providing

a framework to procurement officers considering digital health proposals

- Benchmarking against other comparable health systems.

Measuring digital health maturity at a national level, brings together key health system stakeholders, creating a shared understanding of the current state and supports the subsequent development of strategies and action plans to improve digital health maturity.

### **1.3 Real-world example: Saudi eHealth Maturity Assessment**

In 2020, Saudi Arabia developed a national digital health maturity assessment called the Saudi eHealth Maturity Assessment (SeMA). SeMA's framework measures the level of digitisation across four healthcare segments: medical cities, hospitals, primary care centres and specialised or standalone centres.

#### **SeMA components**

SeMA is built on four pillars:

1. Digital fitness assessment framework – assesses an organization's readiness to uptake technologies by examining factors such as people, processes and existing technology use
2. International digital assessment benchmarking – reviews the scope of other assessment models for ease of comparison
3. Current state – aligns SeMA with assessment programs and regulators in similar environments
4. Emerging technologies – considers emerging technologies the Saudi Arabia National Health Information Centre (NHIC) will adopt in the country, and the prerequisites for these technologies to be included within the scope of SeMA.

The SeMA framework comprises 8 core dimensions (which are further divided into sub-dimensions):

1. Strategy and governance
2. Patient engagement and population health
3. Organization and workforce competencies
4. Applications and infrastructure
5. Privacy and security
6. Interoperability and integration
7. Business intelligence and analytics
8. Emerging technology.

These dimensions enable the SeMA model to be comprehensive and inclusive. When a SeMA is performed, each dimension carries a specific weight in the scoring criteria.

## **SeMA process**

SeMA involves the following steps:

- 1. Orientation – facilities are introduced to SeMA’s objectives and given an overview of the assessment pathway and benefits of completing the SeMA.**
- 2. Registration – facilities are registered in the SeMA portal and asked to list their organizational structures and the services provided.**
- 3. Mock assessment – facilities complete a mock assessment within 3 to 5 weeks of initiating the SeMA, with follow-up and support from the SeMA team throughout the process.**
- 4. Actual assessment – facilities complete the real assessment; the SeMA team provides templates and relevant examples to simplify evidence collection and ensure that data are structured correctly.**
- 5. Online validation – the NHIC team verify audit answers online.**
- 6. Onsite validation (only applied when needed) – the NHIC team verify audit answers based on the selection criteria.**
- 7. Certification and renewal – the facility/ organization is certified and the assessment is renewed every three years or when requested by the facility.**

The results of the assessment fall into eight defined maturity levels based upon adherence to the selection criteria:

1. Absent (zero to 30%)
2. Basic (31 to 40%)
3. Exploring (41 to 50%)
4. Advancing (51 to 60%)
5. Enabled (61 to 70%)
6. Competent (71 to 80%)
7. Connected (81 to 90%)
8. Leading (91 to 100%).

# 2 Digital health maturity assessment framework

Our proposed framework is intended for use by assessors wishing to conduct digital health maturity assessments, to help them select the most appropriate model or assessment for their purposes. This section outlines the details of the proposed framework.

## 2.1 About the framework

The framework was developed by conducting a literature review to identify existing models that have been used to assess digital health maturity. The research methods for the review process are described in Appendix A. The research review identified a number of digital health maturity models, which were used to inform the key concepts in our framework. Specifically, several terms are used in the literature to refer to the categories of materials, processes and capabilities relevant to supporting and improving the digital health maturity of a healthcare system. These terms include “digital technologies”, “leadership and policy”, “governance”, “quality improvement”, “operations” and the “digital capability” of the health workforce and consumers. In our framework, we use the term **meta-domain** to refer to an overarching category of these materials, processes and capabilities - for example, “leadership, strategy, and policy and governance. We use the term **sub-domain** to refer to more-specific examples, such as “leadership, strategy and digital health funding”, or “data governance”. The research method we used to define the meta-domains and sub-domains in our proposed framework is outlined in [Appendix A](#).

The framework proposes evaluating the suitability of different digital health maturity models based on how strongly they map to five broad meta-domains with specific sub-domains. The number of sub-domains included in each model are used to determine an evaluation breadth rating for that meta-domain (

Table 1). These are described in more detail in the following sections:

[Section 2.3](#) of this paper describes each of the meta-domains and their sub-domains

[Section 2.4](#) outlines the evaluation breadth ratings for each meta-domain

[Section 2.5](#) shows how our proposed framework applies to existing digital health maturity assessments.

**Table 1: Suggested framework for assessing the suitability of digital health maturity models**

Meta-domains	Meta-domain 1: Leadership, strategy, policy and governance	Meta-domain 2: Infrastructure, operations and financial management	Meta-domain 3: Data and analytics for health	Meta-domain 4: User attitudes, capability, adoption and feedback	Meta-domain 5: Quality improvement and outcomes tracking
<b>Sub-domains</b>  <i>See Table 2 for sub-domain definitions</i>	<ul style="list-style-type: none"> <li>Leadership, strategy and digital health funding</li> <li>Legislation, policy, standards and incentives</li> <li>Data governance</li> <li>Clinical safety and effectiveness governance</li> <li>Readiness for emerging health technologies (strategy)</li> </ul>	<ul style="list-style-type: none"> <li>National IT infrastructure and assets – availability, maintenance and access</li> <li>Digital health infrastructure – availability, maintenance and access</li> <li>IT operations</li> <li>Cybersecurity preparedness</li> <li>Interoperability readiness and standards adoption</li> </ul>	<ul style="list-style-type: none"> <li>Data and analytics capability</li> <li>Data and analytics application for system effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>Health workforce capability</li> <li>Consumer engagement and capability</li> <li>Digital health solutions adoption and use</li> <li>User attitudes towards digital health</li> </ul>	<ul style="list-style-type: none"> <li>Quality improvement and innovation</li> <li>Outcomes tracking and benefits realisation</li> </ul>
<b>Ratings</b>	Absent Present Low Medium High	Absent Present Low Medium High	Absent Present Included	Absent Present Low Medium High	Absent Present Included

## 2.2 General attributes that may influence selection of a digital health maturity model

There are many attributes that may influence the selection of a digital health maturity assessment. The general attributes that we identified are provided in Table 2, including the definition questions for each attribute. More specific attributes to consider are covered by the meta-domains and sub-domains, discussed in [Section 2.3](#).

Digital health maturity assessors should also ensure that their choice of assessment is informed by the relevance of the assessment criteria in the long-term. This will ensure that the digital health system can address the core requirements of the healthcare system over time (Cresswell, et al., 2019). The Digital Health policy checklist developed by the GDHP and OECD is an example of a framework an assessor could use to evaluate their assessment of choice.

**Table 2: General attributes that may influence selection of a digital health maturity model**

Attribute	Definition questions
<b>Assessment level</b>	<p><b>Which digital health maturity level does this assessment support?</b></p> <p><b>The levels are:</b></p> <ul style="list-style-type: none"> <li>• <b>National (the whole country)</b></li> <li>• <b>Sub-national (a locality or network of care)</b></li> <li>• <b>Organizational</b></li> </ul>
<b>Assessment method</b>	<p><b>How is the assessment administered? For example, is it a web-based survey?</b></p> <p><b>How many questions does the assessment have? How many domains does the assessment cover as defined by the model?</b></p> <p><b>Who completes the assessment?</b></p>
<b>Contact</b>	<p><b>Who or where is the best point of contact for enquiries regarding this assessment?</b></p>

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**Cost/ availability** Is this assessment freely and fully available for use? Does it require further adaptation before it can be used? Is there sufficient detail provided in references to use the assessment as it stands.

**Health sector coverage** Is this model for general application? If not, which health sector(s) or service(s) is it compatible with?

**Level of development**  
(Williams, Schallmo, Lang, & Boardman, 2019)

How developed is this digital health maturity model or assessment?

The levels are:

- Proposed (model domains are proposed)
- Developed (a specific maturity model is developed, with full descriptions of each maturity level for all domains)
- Applied (a maturity model has been implemented and evaluated within its intended context)

**Quality of supporting evidence** What level of evidence supports the construct validity of the model or assessment and the applicability of its results?

**Region of origin** Which geographical area was this model or assessment originally developed for? Is it for a specific province, country, or a multi-country union

**Source** Was this model or assessment developed by commercial, academic, nonprofit/ nongovernment organizations or government organizations?

**Support resources available** What support resources are available?  
Is there a contact person listed?

## 2.3 Digital health maturity meta-domains and sub-domains

The following tables contain our proposed groupings and definitions for each key evaluation sub-domain. The language used in these definitions has been crafted to apply to all levels of assessment (national, subnational and organizational).

**Table 3: Meta-domain 1 – Leadership, strategy, policy and governance**

Sub-domain	Definition
<b>Clinical safety and effectiveness governance</b>	<b>The presence and effectiveness of processes and structures that monitor the impact of digital health transformation on health service delivery and outcomes, to ensure compliance with legislation and frameworks. At the national level, this includes regulation of medical technologies and digital health services. At all levels, this includes regulation of clinical safety, clarifications of accountability/ duty of care, and clinical effectiveness monitoring.</b>
<b>Data governance</b>	<b>The presence and effectiveness of processes and structures that track how data are collected, stored, accessed, transmitted, curated and monitored within the system. It also includes how data is analyzed and by whom, to ensure compliance with legislation and policy. This sub-domain also includes mechanisms for ethical use of data.</b>
<b>Leadership, strategy and digital health funding</b>	<b>This sub-domain assesses the priority of digital health transformation for leadership. This includes the establishment of structures dedicated to planning; progressing and managing digital health transformation; and change and risk management. It also includes the development and ownership of national or subnational digital health strategies, their alignment with local objectives as well as the structured allocation of budget for digital health purposes.</b>

Sub-domain	Definition
<p><b>Legislation, policy, standards and incentives</b></p>	<p><b>The development, implementation, review and updating of laws, policies and standards related to digital health. This includes authorization, authentication, consent, data ownership and sharing, privacy and confidentiality, cybersecurity and interoperability. At a national level, this sub-domain also includes the establishment of incentives to promote digital health activity in the ecosystem.</b></p>
<p><b>Readiness for emerging health technologies (strategy)</b></p>	<p><b>This sub-domain determines whether strategies or policies are in place to prepare for the impact of emerging health technologies such as generative artificial intelligence and genomics. Examples include policies and regulations around artificial intelligence explainability, fairness and transparency.</b></p>

**Table 4: Meta-domain 2 - Infrastructure, operations and financial management**

Sub-domain	Definition
<b>Cybersecurity preparedness</b>	<b>System activities that increase cybersecurity preparedness like education campaigns or security protocols, maintain data security and ensure compliance with cybersecurity standards.</b>
<b>Digital health infrastructure – availability, maintenance and access</b>	<b>Availability of and access to digital health infrastructure required for deployment and use of digital health technologies, including national health information exchange enterprise architecture, unique patient and provider identity management. At the organizational level this includes digital systems for managing patients, beds, medication and laboratories. This sub-domain also covers digital health services such as telehealth and virtual models of care, and planning for the long-term maintenance of digital health infrastructure and assets, including allocation of resources.</b>
<b>Interoperability readiness and standards adoption</b>	<b>System readiness for interoperable health information sharing, and its adoption of interoperability standards. This includes assessing how fragmented the electronic health record/ health information exchange is, the ability of the system to seamlessly exchange data with external organizations or sectors, and any compliance or adoption indicators related to interoperability standards.</b>
<b>IT operations</b>	<b>System activities that support the provision and reliability of IT services, including business continuity plans, incident response and IT support.</b>

Sub-domain	Definition
<b>National IT infrastructure and assets – availability, maintenance and access</b>	<b>Availability of and access to critical infrastructure required for deployment and use of digital health technologies, including internet (wireless and wired), electricity, storage servers, cloud storage, desktop and mobile computers and devices, and printers. This sub-domain also covers planning for long-term maintenance of national IT infrastructure and assets including rules for procurement, allocation of resources, and disaster readiness including backup and recovery plans.</b>

**Table 5: Meta-domain 3 - Data and analytics for health**

Sub-domain	Definition
<b>Data and analytics application for system effectiveness</b>	<b>Use of data and analytics for effective decision-making. This includes having a culture of data driven decision-making and the use of data and analytics to perform system functions, for example policymaking, health service delivery, coordination of care, care personalization.</b>
<b>Data and analytics capability for primary and secondary use</b>	<b>Data and analytics capabilities in the system. This includes the maturity of the data storage format, systematic data collection activity, data entry workload, consistency of documentation, and clinical decision support capabilities.</b>

**Table 6: Meta-domain 4 - User attitudes, capability, adoption and feedback**

Sub-domain	Definition
<b>Consumer engagement and capability</b>	<b>Digital capability and the engagement of healthcare consumers with technology. This includes consumer and carer digital literacy, the use of digital technologies by public health systems to engage with consumers and consumers being offered access to digital health technologies such as apps or patient portals to support their care journey. This also includes consumer participatory health and representation in decision-making bodies.</b>
<b>Digital health solutions adoption and use</b>	<b>Short and long-term actual use of digital health solutions by the healthcare workforce and consumers including percentage of services delivered digitally and percentage of patient record data in an electronic format.</b>
<b>Health workforce capability</b>	<b>Digital capability of the health workforce. This includes human resources policy, talent acquisition, and pre-service and in-service digital capability education and training of the healthcare workforce.</b>
<b>User attitudes towards digital health</b>	<b>User attitudes of healthcare workers and consumers towards digital health, including experiences with digital health transformation, user experience, user satisfaction and ease of use.</b>

**Table 7: Meta-domain 5 - Quality improvement and outcomes tracking**

Sub-domain	Definition
<b>Outcomes tracking and benefits realization</b>	<b>Structures are in place to formally evaluate the outcomes and identify the realized benefits of digital health transformation.</b>
<b>Quality improvement and innovation</b>	<b>Structures are in place to promote quality improvement and innovation. This could include:</b> <ul style="list-style-type: none"><li><b>dedicated bodies to oversee and coordinate quality improvement and innovation activities</b></li><li><b>research and funding partnerships</b></li><li><b>a continuous quality improvement cycle</b></li><li><b>existence of monitoring and evaluation plans processes for applying evaluation results to the next planning cycle</b></li><li><b>participation in open science or open data processes.</b></li></ul>

## **2.4 Evaluation breadth ratings by meta-domain**

Different digital health maturity models include distinct evaluation domains in their scope. To assist with the selection of a maturity assessment model, we have developed evaluation ratings for each meta-domain (Table 4).

Evaluation breadth ratings represent the scope of sub-domains within a meta-domain included in an assessment. They are not intended to indicate how deeply or comprehensively an assessment explores each sub-domain. Importantly, these ratings reflect what is publicly available that could be sourced by the authors.

**Table 8: Definitions of evaluation breadth ratings for each meta-domain**

Evaluation meta-domain	Evaluation breadth rating criteria
<p><b>Leadership, strategy, policy and governance</b></p>	<p><b>Absent: No mention of evaluating any of the included sub-domains</b></p>
	<p><b>Present: Meta-domain is present in this assessment at some level (e.g. terms are mentioned but not discussed in detail), potentially combined with other meta-domains.</b></p>
	<p><b>Low: Inclusion of one or two of the following sub-domains:</b></p> <ul style="list-style-type: none"> <li>(1) Clinical safety and effectiveness governance</li> <li>(2) Data governance</li> <li>(3) Leadership, strategy and digital health funding</li> <li>(4) Legislation, policy, standards and incentives</li> <li>(5) Readiness for emerging health technologies</li> </ul>
	<p><b>Medium: Inclusion of three sub-domains</b></p>
<p><b>Infrastructure, operations and financial management</b></p>	<p><b>High: Inclusion of four or five sub-domains</b></p>
	<p><b>Absent: No mention of evaluating any of the included sub-domains</b></p>
<p><b>Present: Meta-domain is present in this assessment at some level (e.g. terms are mentioned but not discussed in detail), potentially combined with other meta-domains</b></p>	

Evaluation meta-domain

Evaluation breadth rating criteria

	<p><b>Low: Inclusion of one or two of the following sub-domains:</b></p> <ul style="list-style-type: none"><li><b>(1) Cybersecurity preparedness</b></li><li><b>(2) Digital health infrastructure</b></li><li><b>(3) Interoperability readiness and standards adoption</b></li><li><b>(4) IT operations</b></li><li><b>(5) National IT infrastructure and assets</b></li></ul> <p><b>Medium: Inclusion of three or four sub-domains</b></p> <p><b>High: Inclusion of all five sub-domains</b></p>
<p><b>Data and analytics for health</b></p>	<p><b>Absent: No mention of evaluating enhanced health service provision (e.g. indicators related to clinical decision support, data analytics, coordination of care) resulting from digital health maturity</b></p> <p><b>Present: Meta-domain is present in this assessment at some level (e.g. terms are mentioned but not discussed in detail), potentially combined with other meta-domains</b></p> <p><b>Included: Assessment tool includes evaluation of data and analytics activities related to the delivery or improvement of health policies or services</b></p>

Evaluation meta-domain

Evaluation breadth rating criteria

<p><b>User attitudes, capability, adoption and feedback</b></p>	<p><b>Absent: No mention of evaluating any of the included sub-domains</b></p> <p><b>Present: Meta-domain is present in this assessment at some level (e.g. terms are mentioned but not discussed in detail), potentially combined with other meta-domains</b></p> <p><b>Low: Inclusion of one or two of the following sub-domains:</b></p> <ul style="list-style-type: none"><li>(1) Consumer engagement and capability</li><li>(2) Digital health solutions adoption and use</li><li>(3) Health workforce capability</li><li>(4) User attitudes towards digital health</li></ul> <p><b>Medium: Inclusion of three sub-domains</b></p> <p><b>High: Inclusion of all four sub-domains</b></p>
<p><b>Quality improvement and outcomes tracking</b></p>	<p><b>Absent: No mention of outcomes tracking or quality improvement processes to monitor and improve digital health implementation</b></p> <p><b>Present: Meta-domain is present in this assessment at some level (e.g. terms are mentioned but not discussed in detail), potentially combined with other meta-domains</b></p> <p><b>Included: Assessment tools include evaluation of quality improvement and innovation processes and/or outcomes tracking and benefits realization</b></p>

## 2.5 Identified digital health maturity assessments

Table 5 lists the digital health maturity assessment models identified during this research, including their assessment level, health sector coverage and evaluation ratings according to our proposed framework. Definitions of the model acronyms are at the end of this paper (see [Acronyms](#)).

**Table 9: Digital health maturity assessments and their evaluation breadth ratings**

Model	Assessment level	Health sector coverage	Leadership, strategy, policy and governance	Infrastructure, operations and financial management	Data and analytics for health	User attitudes, capability, adoption and feedback	Quality improvement and outcomes tracking
<b>Africa CDC HIEMAM</b>	<b>National</b>	<b>Whole health system</b>	<b>Present</b>	<b>Present</b>	<b>Absent</b>	<b>Present</b>	<b>Absent</b>
<b>Alyahya</b>	<b>National, subnational or organizational</b>	<b>Digital health initiatives</b>	<b>Low</b>	<b>Medium</b>	<b>Included</b>	<b>Low</b>	<b>Absent</b>
<b>CHIME</b>	<b>Organizational</b>	<b>Hospitals, outpatient clinics, primary care, aged care</b>	<b>High</b>	<b>High</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>CVCMM</b>	<b>Subnational or organizational</b>	<b>Virtual care providers</b>	<b>Medium</b>	<b>Low</b>	<b>Absent</b>	<b>Low</b>	<b>Included</b>
<b>DHAT</b>	<b>National or subnational</b>	<b>Whole health system</b>	<b>High</b>	<b>High</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>DHMA Gippsland</b>	<b>Organizational</b>	<b>Primary care</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>

Model	Assessment level	Health sector coverage	Leadership, strategy, policy and governance	Infrastructure, operations and financial management	Data and analytics for health	User attitudes, capability, adoption and feedback	Quality improvement and outcomes tracking
<b>DHPMAT</b>	<b>National, subnational or organizational</b>	<b>Whole health system</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>DHSMS</b>	<b>National</b>	<b>Whole health system</b>	<b>Medium</b>	<b>Low</b>	<b>Included</b>	<b>Absent</b>	<b>Absent</b>
<b>DMAACCS</b>	<b>Organizational</b>	<b>Residential aged care and community care sectors</b>	<b>Low</b>	<b>High</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>DMAPP</b>	<b>Organizational</b>	<b>Primary care</b>	<b>Medium</b>	<b>High</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>DR</b>	<b>Organizational</b>	<b>Hospital</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>
<b>DRM</b>	<b>National</b>	<b>Not applicable</b>	<b>Absent</b>	<b>Absent</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>Duncan</b>	<b>Organizational</b>	<b>Hospital</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>Medium</b>	<b>Absent</b>
<b>EDIT</b>	<b>National</b>	<b>Whole health system</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>

Model	Assessment level	Health sector coverage	Leadership, strategy, policy and governance	Infrastructure, operations and financial management	Data and analytics for health	User attitudes, capability, adoption and feedback	Quality improvement and outcomes tracking
<b>EMM</b>	<b>Organizational</b>	<b>Community-based physicians</b>	<b>Absent</b>	<b>Low</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>Eymann</b>	<b>Organizational</b>	<b>Public health services</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>
<b>Flott</b>	<b>Subnational or organizational</b>	<b>Digital health solution within a care pathway</b>	<b>Absent</b>	<b>Medium</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>GDHM</b>	<b>National</b>	<b>Whole health system</b>	<b>Medium</b>	<b>Medium</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>
<b>Greenhalgh</b>	<b>Organizational</b>	<b>Virtual care providers</b>	<b>Present</b>	<b>Present</b>	<b>Absent</b>	<b>Present</b>	<b>Absent</b>
<b>HIMSS AMAM</b>	<b>Organizational</b>	<b>Hospital, community care, primary care</b>	<b>Low</b>	<b>Absent</b>	<b>Included</b>	<b>Included</b>	<b>Included</b>

Model	Assessment level	Health sector coverage	Leadership, strategy, policy and governance	Infrastructure, operations and financial management	Data and analytics for health	User attitudes, capability, adoption and feedback	Quality improvement and outcomes tracking
<b>HIMSS C-COMM</b>	<b>Organizational</b>	<b>Community-based health services</b>	<b>Low</b>	<b>Medium</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>HIMSS DHI Full</b>	<b>Organizational</b>	<b>Whole health system</b>	<b>Low</b>	<b>Low</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>HIMSS DHI Rapid</b>	<b>Organizational</b>	<b>Whole health system</b>	<b>Low</b>	<b>Low</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>HIMSS EMRAM</b>	<b>Organizational</b>	<b>Hospital</b>	<b>Low</b>	<b>Medium</b>	<b>Included</b>	<b>Low</b>	<b>Absent</b>
<b>HISIMT</b>	<b>National or subnational</b>	<b>Health information system</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>HIS SOCI</b>	<b>National</b>	<b>Health information system</b>	<b>Medium</b>	<b>High</b>	<b>Included</b>	<b>Low</b>	<b>Absent</b>
<b>HITVHF</b>	<b>Organizational</b>	<b>Whole health system</b>	<b>Absent</b>	<b>Medium</b>	<b>Included</b>	<b>Absent</b>	<b>Included</b>
<b>ICMM</b>	<b>Organizational</b>	<b>Health Informatics</b>	<b>Low</b>	<b>Absent</b>	<b>Included</b>	<b>Low</b>	<b>Absent</b>

Model	Assessment level	Health sector coverage	Leadership, strategy, policy and governance	Infrastructure, operations and financial management	Data and analytics for health	User attitudes, capability, adoption and feedback	Quality improvement and outcomes tracking
<b>Krasuska</b>	<b>Organizational</b>	<b>Hospital</b>	<b>Absent</b>	<b>Medium</b>	<b>Included</b>	<b>Absent</b>	<b>Included</b>
<b>Lee</b>	<b>Organizational</b>	<b>Hospital</b>	<b>High</b>	<b>High</b>	<b>Included</b>	<b>Medium</b>	<b>Included</b>
<b>LTC ITM</b>	<b>Organizational</b>	<b>Aged care</b>	<b>Absent</b>	<b>Medium</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>
<b>Nebati</b>	<b>Organizational</b>	<b>Hospital</b>	<b>Low</b>	<b>Low</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>
<b>NHS CDMI</b>	<b>Organizational</b>	<b>Hospital</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>	<b>Unknown</b>
<b>NHS DMA</b>	<b>Organizational</b>	<b>Whole health system</b>	<b>Low</b>	<b>Medium</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>NHSE DMI</b>	<b>Organizational</b>	<b>Whole health system</b>	<b>Low</b>	<b>Medium</b>	<b>Included</b>	<b>Medium</b>	<b>Absent</b>
<b>PAHO IS4H-MM</b>	<b>Organizational</b>	<b>Whole health system</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>Medium</b>	<b>Included</b>
<b>PHIT</b>	<b>National or subnational</b>	<b>Public health services</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>Raimo</b>	<b>Organizational</b>	<b>Hospital</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>	<b>Absent</b>	<b>Absent</b>

Model	Assessment level	Health sector coverage	Leadership, strategy, policy and governance	Infrastructure, operations and financial management	Data and analytics for health	User attitudes, capability, adoption and feedback	Quality improvement and outcomes tracking
<b>SeMA</b>	<b>National</b>	<b>Individual hospital or clinic</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>Low</b>	<b>Included</b>
<b>Teixeira</b>	<b>Organizational</b>	<b>General practice</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>	<b>Low</b>	<b>Included</b>
<b>TMSMM</b>	<b>Organizational</b>	<b>Telemedicine</b>	<b>Low</b>	<b>Low</b>	<b>Absent</b>	<b>Low</b>	<b>Absent</b>
<b>VCMM</b>	<b>Organizational</b>	<b>Virtual care providers</b>	<b>Medium</b>	<b>Low</b>	<b>Absent</b>	<b>Medium</b>	<b>Included</b>
<b>VDHMM</b>	<b>Organizational</b>	<b>Public health services</b>	<b>Medium</b>	<b>Medium</b>	<b>Included</b>	<b>High</b>	<b>Included</b>
<b>Weik</b>	<b>Organizational</b>	<b>General practice</b>	<b>Low</b>	<b>Medium</b>	<b>Included</b>	<b>Medium</b>	<b>Absent</b>

# 3 Current use of digital health maturity assessments

The findings outlined in this research paper informed the development of a digital health maturity survey that was circulated to GDHP member countries in late 2024 and early 2025. Further details on the survey and its results are included in [Appendix B](#).

The aims of the survey were to gain further insights into how digital health maturity assessments are currently used worldwide and to guide subsequent work on digital health maturity assessments at the international level.

Of the twenty-six GDHP member countries that responded to the survey, most began conducting digital health maturity assessments in 2021, and only one member country reported conducting assessments prior to 1990. This timing suggests that the COVID-19 pandemic may have prompted countries to improve their digital health initiatives and advance their digital health maturity, as the global pandemic highlighted the limitations of traditional healthcare delivery and underscored the urgency of digital transformation.

However, there appears to be no pattern to how often countries perform digital health maturity assessments; about one-third of the countries who responded to the survey indicated that they perform assessments yearly and about a quarter of the countries who responded have no schedule for assessments. Most of the surveyed countries use locally developed models rather than universally applied models.

The most reported reasons selected by countries participating in the survey for performing digital health maturity assessments were to inform national and organizational digital transformation strategies, and to assess a system's digital maturity and develop strategies for improvement. The least common reason was to benchmark against other comparable health systems. This indicates that GDHP member countries are focused on their own digital health strategies and outcomes, rather than evaluating how their health systems compare with others.

The GDHP member countries surveyed measure "interoperability" and "infrastructure, operations and financial management" more than "leadership and governance" and "quality improvement and outcomes tracking". There is a risk that the variability in the meta-domains measured by digital health maturity assessments could lead to incomplete assessment of the drivers of digital health maturity, resulting in missed opportunities to improve digital health adoption. This might reflect differing priorities for digital health maturity development or the level at which various domains are administered from, that is locally vs nationally.

Among the reported potential and realised benefits of current digital health maturity assessments, is their capacity to support:

- development of digital health legislation and policies
- identification of priority areas to address
- appropriate investment in digital health initiatives.

This indicates that these are the benefits that countries consider the most relevant for conducting digital health maturity assessments. However, survey respondents also identified various gaps in their current digital health maturity assessments with a recurring theme being that existing assessments cannot be effectively applied to the current digital health landscape – for example, because of a lack of real-world standards adoption. To overcome this, countries have stated they are developing new frameworks and management techniques to improve digital health maturity assessments. This emphasises the timeliness of the GDHP’s aim to develop an evaluation framework for digital health maturity assessments.

Most countries use both local and global technology vendors for various health services and solutions in their public and private healthcare systems. The survey responses indicate that vendors are typically chosen by organizations based on the healthcare service, although countries prioritise vendors that have knowledge of the local health system and infrastructure so that solutions can be tailored to the specific digital health landscape. Most of the respondents who use technology vendors reported anticipated benefits such as avoided cost, interoperability improvements and increased innovation.

Overall, survey findings show GDHP member countries currently prioritise their individual country’s digital health needs over global benchmarks and initiatives. It is also evident that member countries are seeking to improve their digital health maturity.

# 4 Next steps

The next steps to further advance this work could include an analysis of domain coverage in the identified digital health maturity models by assessment level – at national, subnational and organizational level – and health sector coverage. For example, compared to organizational level assessments, national and subnational level assessments appear to more comprehensively include leadership, strategy, policy and governance in their scope.

A gap analysis could also be undertaken at the:

- National level – to identify which global regions may be missing.
- Domain level – to identify which meta-domains or sub-domains may need more focus.

# Acronyms

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Acronym	Description
<b>Africa CDC HIEMAM</b>	<b>Africa Centres for Disease Control and Prevention Health Information Exchange Maturity Assessment Model</b>
<b>CHIME</b>	<b>College of Healthcare Information Management Executives</b>
<b>CVCMM</b>	<b>Canadian Virtual Care Maturity Model</b>
<b>DHAT</b>	<b>Digital Health Assessment Toolkit</b>
<b>DHMA</b>	<b>Digital Health Maturity Assessment</b>
<b>DHPMAT (DHPMAT-MM)</b>	<b>Digital Health Profile and Maturity Assessment Toolkit (Maturity Model)</b>
<b>DHSMS</b>	<b>Digital Health System Maturity Score</b>
<b>DMAACCS</b>	<b>Digital Maturity in Australian Aged and Community Care Survey</b>
<b>DMAPP</b>	<b>Digital Maturity Assessment of Primary Healthcare Providers</b>
<b>DR</b>	<b>DigitalRadar</b>
<b>DRM</b>	<b>Digitalization Road Map</b>

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Acronym	Description
<b>EDIT</b>	<b>Early-Stage Digital Health Investment Tool</b>
<b>EMM</b>	<b>Electronic Medical Records Maturity Model</b>
<b>GDHM</b>	<b>Global Digital Health Monitor</b>
<b>GDHP</b>	<b>Global Digital Health Partnership</b>
<b>HIMSS</b>	<b>Healthcare Information and Management Systems Society</b>
<b>HIMSS AMAM</b>	<b>HIMSS Adoption Model for Analytics Maturity</b>
<b>HIMSS C-COMM</b>	<b>HIMSS Community Care Outcomes Maturity Model</b>
<b>HIMSS DHI</b>	<b>HIMSS Digital Health Indicator</b>
<b>HIMSS EMRAM</b>	<b>HIMSS Electronic Medical Record Adoption Model</b>
<b>HISIMT</b>	<b>Health Information Systems Interoperability Maturity Toolkit</b>
<b>HIS SOCI</b>	<b>Health Information System Stages of Continuous Improvement Toolkit</b>
<b>HITVHF</b>	<b>Health Information Technology Value Hierarchy Framework</b>

Acronym	Description
<b>ICMM</b>	<b>Informatics Capability Maturity Model (National Health Service)</b>
<b>IT</b>	<b>Information technology</b>
<b>LTC ITM</b>	<b>Long Term Care IT Maturity Model</b>
<b>NHS CDMI</b>	<b>National Health Service Clinical Digital Maturity Index</b>
<b>NHS DMA</b>	<b>National Health Service Digital Maturity Assessment</b>
<b>NHSE DMI</b>	<b>National Health Service England Digital Maturity Index</b>
<b>PAHO IS4H-MM</b>	<b>Pan American Health Organization Information Systems for Health Maturity Assessment Tool</b>
<b>PHIT</b>	<b>Public Health Information Technology Maturity Index</b>
<b>SeMA</b>	<b>Saudi eHealth Maturity Assessment</b>
<b>TMSMM</b>	<b>Telemedicine Service Maturity Model</b>
<b>VCMM</b>	<b>Virtual Care Maturity Model</b>
<b>VDHMM</b>	<b>Victorian Digital Health Maturity Model</b>

# Appendix A: Review methodology

This section describes the research review process we undertook to define the meta-domains and sub-domains that form the basis of our proposed framework.

## Review protocol

The review team conducted a rapid literature review. Rapid reviews accelerate the process of a traditional systematic review by streamlining or omitting various methods, making them a resource-efficient way of producing evidence for stakeholders (Stern, et al., 2020). We conducted this review in accordance with Cochrane Rapid Review Methods (Garritty, et al., 2021) to ensure a validated approach and rigorous quality standards.

## Literature search

The search and screening process aimed to efficiently identify and select relevant studies while maintaining the validity and quality of the rapid review process. An overview of this process is in Figure A-1. To align our review with the research aims and questions, we used a Population, Intervention, Comparison and Outcomes (PICO) analysis (Garritty, et al., 2021) (Table A-1).

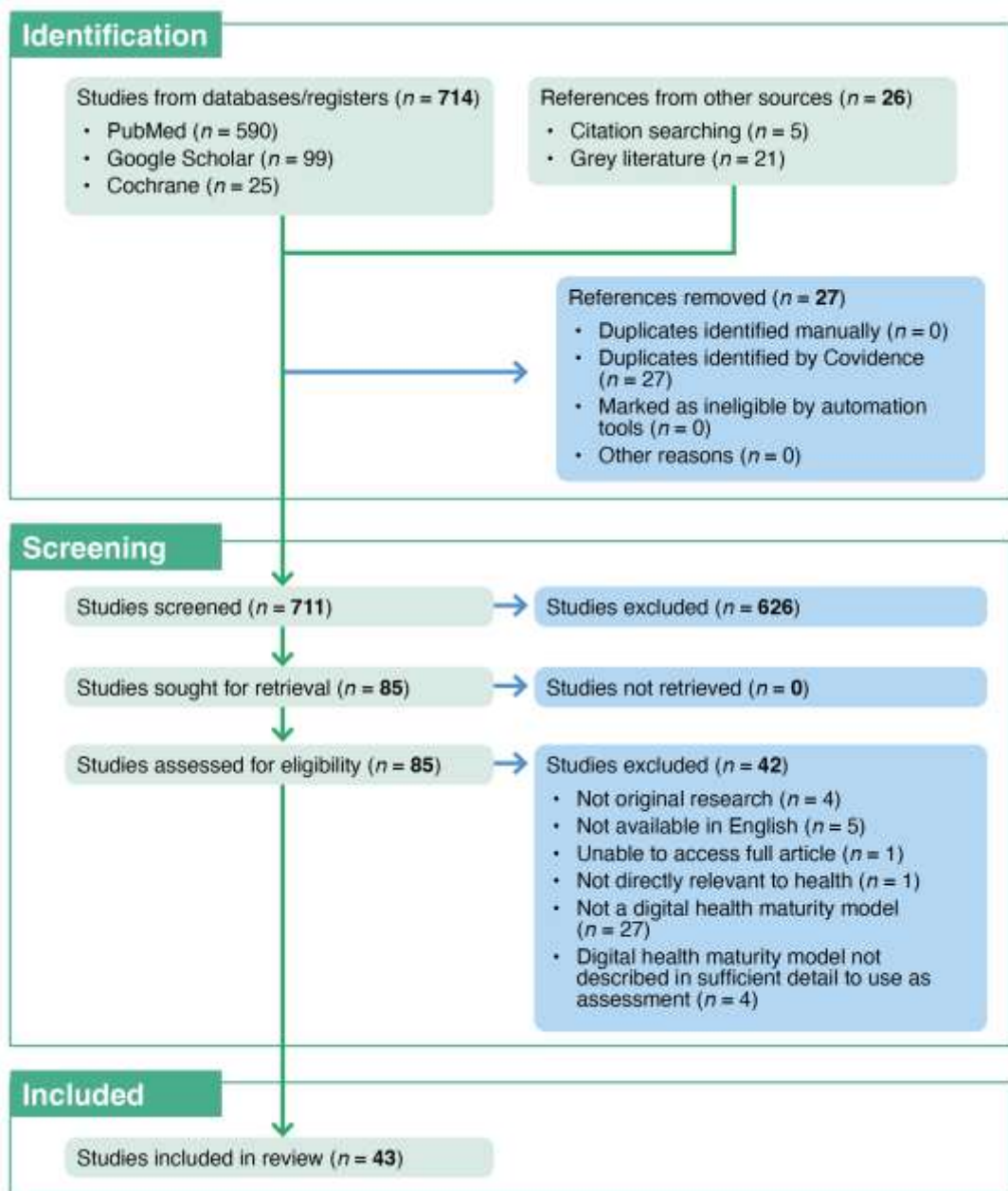
**Table A-1: PICO analysis outline**

Framework component	Primary search parameters	Alternate search terms
<b>Population</b>	<b>Health*</b>	<b>Medic*</b>
<b>Intervention</b>	<b>Model*</b>	<b>Framework*, standard*</b>
<b>Comparator</b>	<b>Not applicable</b>	<b>Not applicable</b>
<b>Outcomes</b>	<b>Digital maturity</b>	<b>Information technology maturity, digitalisation, digitalization, technical</b>

maturity, telemedicine readiness, digital readiness, digital excellence

Note: The asterisk (\*) after search terms indicates that the word has been truncated. This allows various endings to be searched using the same base word.

Figure A-1: PRISMA flow chart of the rapid review search



## Search strategy

The review team developed a comprehensive search strategy based on the PICO analysis, using Boolean operators and Medical Subject Headings (MeSH) terms. The strategy was designed to retrieve relevant peer-reviewed literature and was adapted for each database. The rapid review team piloted the strategy before implementation.

## Academic literature search

We applied the search strategy to search PubMed and the Cochrane Central Register of Controlled Trials (CENTRAL) on 27 May 2024. Details of the search terms used are in Table A-1. Due to resource constraints, the academic database Embase was excluded from the search. Searches were limited to papers published between 2019 and 2024 inclusive to ensure currency and relevancy. Given time and resource limitations, only papers published in English were included unless the translated abstract clearly described a digital health maturity model. As well as academic database searches, we manually searched paper citations and reference lists for all full-text articles selected for inclusion, also known as a “backward citation search”.

## Grey literature search

In addition to peer-reviewed literature, we actively searched and identified grey literature (e.g. government white papers or conference papers) in Google and Google Scholar searches to capture a broader spectrum of evidence. For the Google search, we used the terms “digital maturity”, “model” and “health”. For the Google Scholar search, we used our search strategy.

## Screening and study selection

We imported all citations captured within the initial searches to a systematic review software (Covidence) and removed duplicate records. A single reviewer conducted the initial title and abstract screening in accordance with predefined eligibility criteria (Table A-2). Records meeting the initial screening criteria proceeded to dual full-text screening, conducted by two independent reviewers.

Any ambiguities or discrepancies between reviewers were resolved through discussion.

**Table A-2: Rapid review eligibility criteria**

Inclusion criteria	Exclusion criteria
<ol style="list-style-type: none"> <li>1. <b>Must outline a digital maturity model</b></li> <li>2. <b>Must assess the digital maturity of health-related spaces</b></li> <li>3. <b>Must be original research (including reviews that synthesize results into a new framework or model)</b></li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Not a digital maturity model</b></li> <li>2. <b>Not directly relevant to health</b></li> <li>3. <b>Unable to access full article</b></li> <li>4. <b>Not in English</b></li> <li>5. <b>Digital health maturity model is not described in sufficient detail to extract basic attributes</b></li> </ol>

**Data extraction**

*Forty-three assessments were included in this review (Note: The asterisk (\*) after search terms indicates that the word has been truncated. This allows various endings to be searched using the same base word.*

Figure A-1). Five members of the review team extracted the data using a predesigned and piloted extraction form included as the accompanying spreadsheet table, to systematically capture information from all included studies. The extracted data included the:

- Name of the digital health maturity model
- Source of the model (academic, government or commercial)
- Model assessment level and health sector specialisation
- Assessment method, support resources available and assessment cost/availability
- Level of model development
- Domains of digital health included in the model, as mapped to our framework of meta-domains and sub-domains.

To ensure consistency in data extraction, we used quality control measures such as cross-checking and discussed how to address disagreements.

In the paper review process, a few models which were overlooked by the initial search strategy were brought to our attention by reviewers. These were included in the synthesis table described below.

## **Synthesis of key evaluation sub-domains and meta-domains**

We used a tabulated synthesis approach to describe the digital health domains covered in the digital maturity models and to develop a more comprehensive definition of the domains. This was done because digital health maturity models were presented in varying levels of detail, scope and maturity in the included literature. Reviewers tracked the digital health domains described in the included assessments. Once revision was complete, the reviewers consolidated recurring domains of digital health, combining similar definitions and disqualifying definitions irrelevant to digital health. These formed the sub-domains described in this document. Definitions for each sub-domain were developed by systematically reviewing all text for a single domain and incorporating it into a definition. Finally, similar sub-domains were grouped into meta-domains.

# Appendix B: Survey on the use of digital health maturity assessments

This section outlines the development and findings of the digital health maturity survey that was circulated to GDHP member countries. The exact wording of the survey questions can be found at the end of this section, after the outlined results.

## Survey development

The Australian members of the GDHP Evidence and Evaluation Stream led the development of the digital health maturity survey with contributions and feedback from the GDHP Evidence and Evaluation workstream to refine the questions. The survey first opened on 31 October 2024 and ran until 30 December 2024.

The survey was reopened between 7 January and 31 January 2025 to align with the GDHP Summit in the Hague that took place from 22 to 24 January 2025. The purpose was to increase the number of respondents, allowing a broader understanding of digital health maturity assessments worldwide.

A total of twenty-six GDHP member countries responded to the survey.

## Survey findings

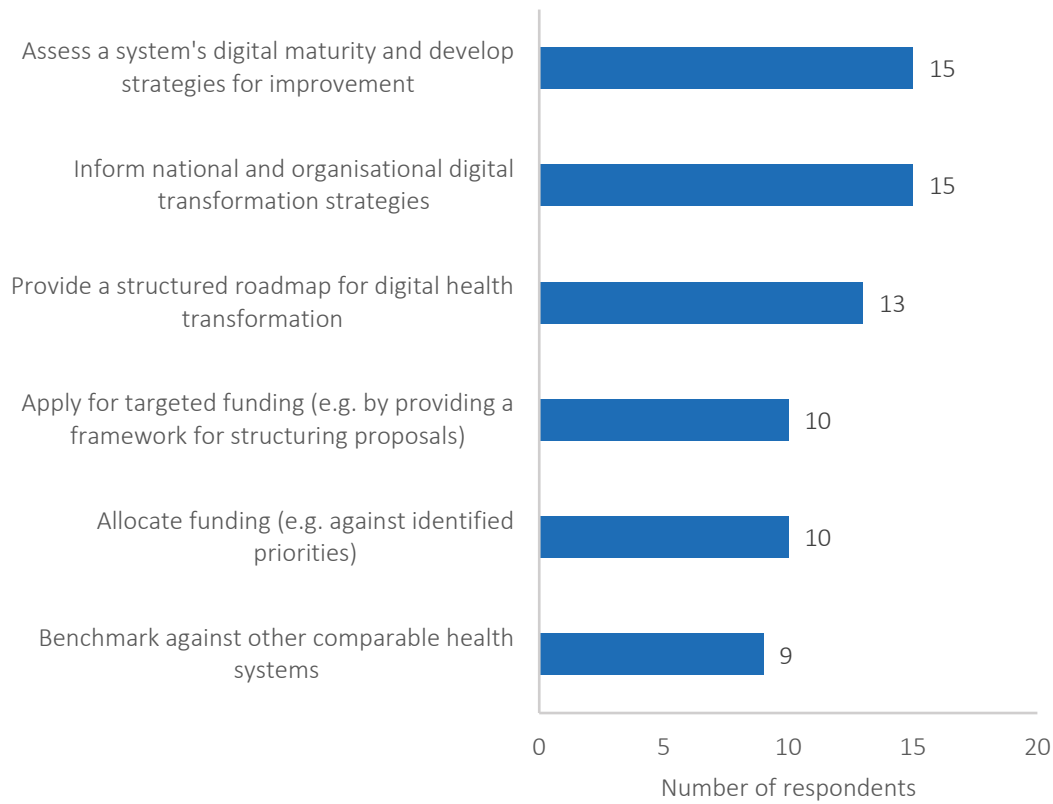
Of the twenty-six member countries who responded to the survey:

- 22 reported that they conduct digital health maturity assessments
- 2 reported that they do not conduct digital health maturity assessments
- 2 did not report whether they conduct digital health maturity assessments.

## Reasons for conducting digital health maturity assessments

Of the twenty-two GDHP member countries that conduct digital health maturity assessments, fifteen reported that a reason for doing so was to inform national and organizational digital transformation strategies, and to assess a system's digital maturity and develop strategies for improving maturity. The least common reason for conducting digital health maturity assessments – selected by only nine of the responding countries who reported conducting assessments – was to benchmark against other comparable health systems (Figure A-2).

**Figure A-2: Reasons why GDHP member countries conduct digital health maturity assessments**

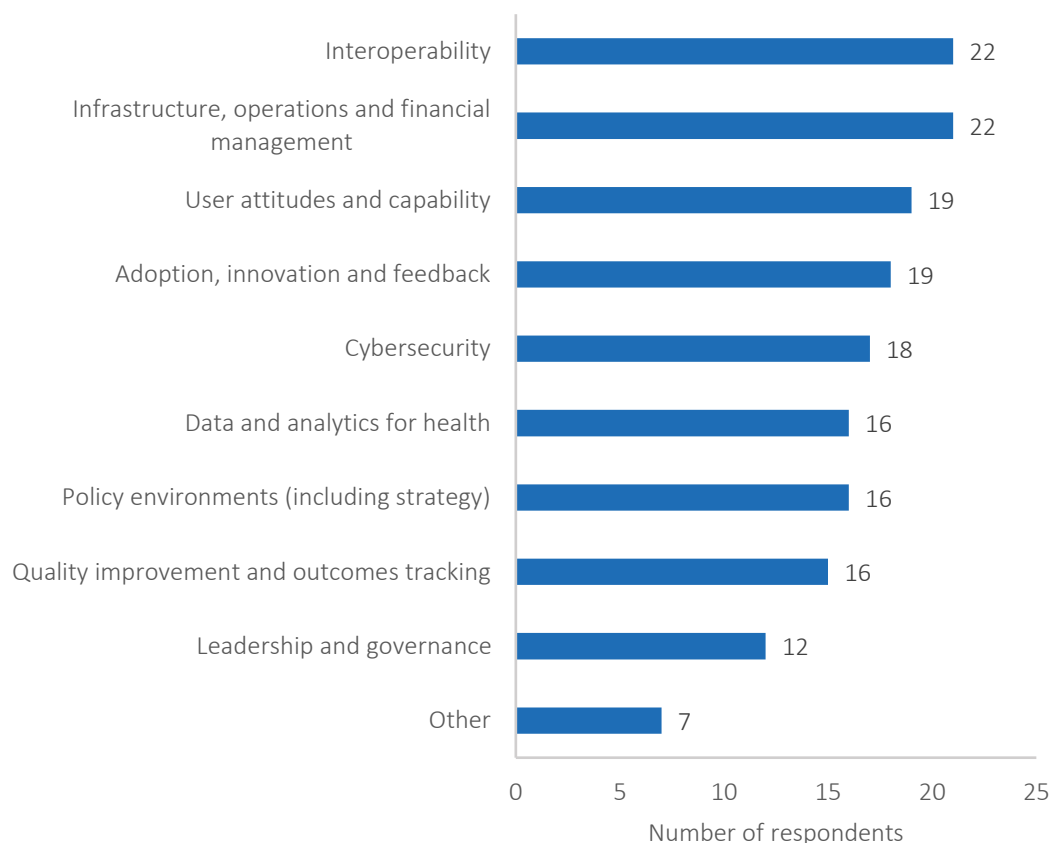


**Note: Not all countries responded to all domains. Some answers are not mapped. Countries were able to select multiple reasons for conducting digital health maturity assessments**

## Meta-domains measured in digital health maturity assessments

The survey asked participants to indicate the meta-domains that are measured in their digital health maturity assessments. Of the surveyed countries that conduct digital health maturity assessments, all ( $n = 22$ ) selected “interoperability” and “infrastructure, operations and financial management”. The least-selected meta-domains were “leadership and governance” ( $n = 12$ ) and “other” ( $n = 7$ ) (Figure A-3).

**Figure A-3: Meta-domains measured in digital health maturity assessments by GDHP member countries**



**Note: Not all countries responded to all domains.**

## Types of models used

Of the countries that conduct digital health maturity assessments, at least twelve reported using locally developed digital health maturity models rather than universally applied models.

Countries use locally developed models for different purposes. Some appear to use different models for different regions, indicated by the qualitative response “decentralised regional evaluation models”. Other respondents reported using locally developed models to make evidence-based decisions for their country’s interests, indicated by the qualitative response that a digital health maturity assessment “gave

... insights on where best to allocate future investment in Digital Health ... as part of the development of a national policy.”

Although used less often than locally developed models, universally applied models such as the ones developed by the Healthcare Information Management and Systems Society (HIMSS) and the Global Digital Health Monitor (GDHM) are still used to measure most meta-domains. Eleven countries reported using HIMSS assessments for certain domains of digital health maturity, while seven reported using aspects of GDHM criteria in their maturity assessments.

## **When digital health maturity assessments were first conducted**

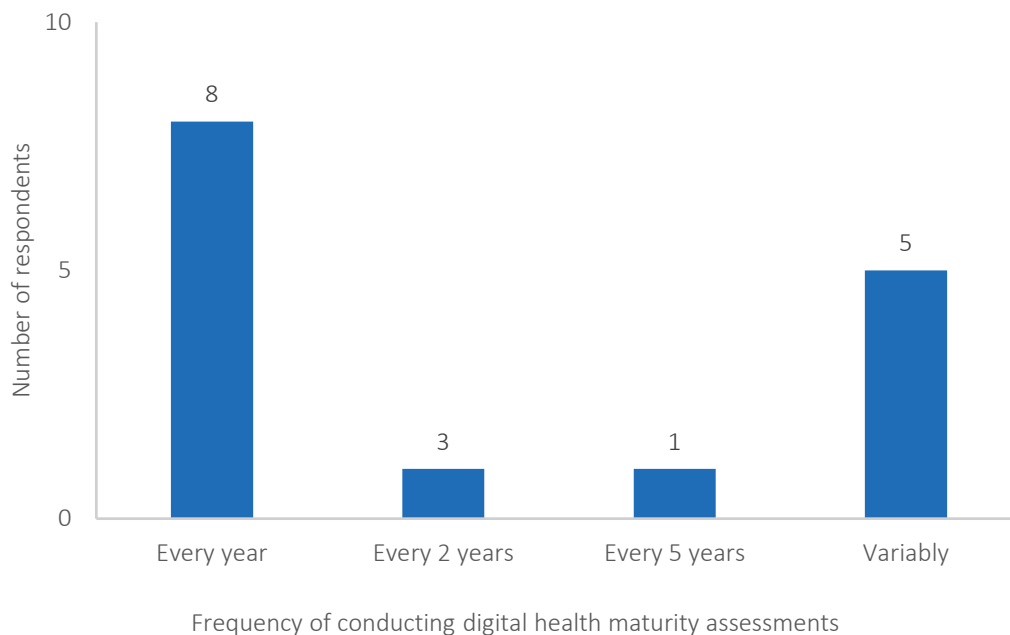
One GDHP member country reported that they started conducting digital health maturity assessments before 1990. However, the most common year for commencing assessments was 2021, selected by four of the countries that conduct digital health maturity assessments. Four other responding countries reported differing starting years for their assessments.

## **Frequency for conducting digital health maturity assessments**

The most reported frequency for conducting digital health maturity assessments was yearly, selected by eight of the countries that conduct assessments. Around a quarter ( $n=5$ ) of respondents reported a “variable” frequency for conducting assessments (Figure A-4). The reasons for a variable frequency included (as indicated by qualitative responses):

- Assessments conducted based on “areas of interest”
- Regional variability
- Assessments vary by “type of respondent”
- Assessments occur “once per specific health data exchange”
- There is no schedule for digital health maturity assessments

**Figure A-4: Frequency that GDHP member countries conduct digital health maturity assessments**



**Note: Not all countries responded to this question.**

## Perceived gaps and benefits of digital health maturity assessments

GDHP member countries were asked about the perceived benefits and gaps of the assessments they currently use. Of the countries that conduct digital health maturity assessments:

- Most reported that there are benefits with their current assessments ( $n=16$ ).
- A majority reported that there are gaps in their current assessments ( $n=14$ )
- A minority reported that there are no gaps in their current assessments ( $n=2$ )

The gaps identified included:

- A lack of regional autonomy
- The model only being applied to the public health system
- A lack of maturity models for different types of healthcare services
- A lack of real-world standards adoption
- No quantitative and qualitative assessment of patient outcomes

and health-cost reduction.

- The fragmented nature of the solution landscape.

Respondents reported how gaps are being addressed; this included assessing the role of artificial intelligence, as well as adopting change management frameworks and training programs to ensure healthcare staff are prepared for digital transformation.

Regarding the anticipated value, potential or realised benefits of current digital health maturity assessments, the most common benefits reported were that the assessments enabled:

- Development of digital health legislation and policies ( $n=5$ )
- Identification of priority areas to address ( $n=5$ )
- Appropriate investment in digital health initiatives and reduced costs of digital health services ( $n=4$ ).

## Technology vendors used in healthcare systems

Survey participants were asked about the use of technology vendors in their country's public and private healthcare systems. Of the GDHP member countries that responded, 15 reported that they use technology vendors. Countries use both global and local vendors, and vendors are used for various health services and solutions, such as telemedicine, electronic medical records and cybersecurity. Respondents also indicated that the vendors used vary based on the healthcare service with 10 countries using 3 or more technology vendors. Furthermore, countries prioritise technology vendors that have knowledge of the local health system and infrastructure. The most common vendors used are EPIC (reported by seven countries) and Cerner/Oracle (reported by 5 countries).

Respondents were also asked about the anticipated value, potential or realised benefits from using technology vendors. Of the countries that use technology vendors, thirteen reported anticipated benefits from doing so, including:

- Cost benefits ( $n=3$ )
- Interoperability ( $n=2$ )
- Innovation ( $n=2$ ).

The qualitative responses noted that the benefits of using technology vendors include:

- Increased efficacy, cost benefits, innovation and growth opportunities
- Better care continuity and experiences
- A good value-for-money ratio and a knowledge of local market needs.

## List of GDHP member countries who participated in the digital health maturity assessment survey

1. Australia
2. Austria
3. Brazil
4. Canada
5. Cyprus
6. Czechia
7. Estonia
8. Finland
9. Hong Kong
10. India
11. Ireland
12. Japan
13. Lithuania
14. The Netherlands
15. New Zealand
16. Poland
17. Portugal
18. Saudi Arabia
19. Singapore
20. South Korea
21. Sweden
22. Uganda
23. United Kingdom of Great Britain and Northern Ireland
24. United States of America
25. Uruguay
26. Zambia

# Text of the survey which was distributed to the GDHP member countries regarding their use of digital health maturity assessments

## GDHP Digital Maturity Assessment Survey

This short survey asks about what measures are being used in your country to track the development of digital health maturity. This includes what aspects of digital health maturity are prioritised, what parties are involved with this development, and which software vendors are used. It is hoped that the data from this survey will inform a baseline level of understanding of digital health maturity assessment criteria globally.

Digital health maturity is the extent to which digital technologies are leveraged to provide high-quality healthcare by augmenting and contributing to health service delivery and patient experience.

Importantly, digital health maturity encompasses not only the development and implementation of a healthcare system’s digital health technologies, such as IT infrastructure and interoperable systems, but also the maturity of the processes and capabilities that surround their implementation and use; this includes areas such as governance and workforce capabilities. These processes and capabilities can include leadership and policy, governance, quality improvement, operations, and the ability of both the health workforce and consumers to engage with digital health systems.

If you cannot use the tick boxes provided in this survey, please **bold** the answers you are selecting.

Please enter your country:

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Please enter the organization you represent:

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Please provide an email address that can be used for follow-up on this survey:

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A1. Are digital health maturity assessments in healthcare conducted in your country?

Yes

No

**Skip To: A9 if you answered NO to Question A1.**

A2. For which of the following domains are you using digital maturity assessments [for the public/ private healthcare system]? Please select all that apply.

- Policy Environments (including strategy)
- User attitudes and capability
- Adoption, innovation, and feedback
- Cybersecurity
- Interoperability
- Quality improvement and outcome tracking
- Data and analytics for health
- Infrastructure, operations, and financial management
- Leadership and governance
- Other

For each domain you selected in Question A2, please answer the opposite A3 question – e.g. if you selected ‘Interoperability’ in Question A2, please answer Question A3.5 about what digital maturity models are used to assess interoperability in your country.

A3.1 For policy environments, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.2 For user attitudes and capability, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.3 For adoption, innovation, and feedback, what digital maturity model/s is/are

used in your country [for the public/ private healthcare system]?

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A3.4 For **cybersecurity**, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.5 For **interoperability**, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.6 For **quality improvement and outcome tracking**, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.7 For **data analytics for health**, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.8 For **infrastructure, operations, and financial management**, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.9 For **leadership and governance**, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]?

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A3.99 For any **other** domains, what digital maturity model/s is/are used in your country [for the public/ private healthcare system]? Please describe the domain.

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A4. When did your country start conducting digital maturity assessments in healthcare? Please indicate the year (1990 to 2024). If it was before 1990, please write 'before 1990'.

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A5. How frequently are digital maturity assessments conducted in your country?

More than yearly

- Yearly
  - Every two years
  - Every five years
  - Every ten years
  - Other (please specify)
- 

A6. Why is your country conducting digital maturity assessments in healthcare?  
Please select all that apply.

- To assess a system's digital maturity and develop strategies for improvement
  - To provide a structured roadmap for digital health transformation
  - To inform or continue to inform national/ organizational digital transformation strategy/ strategies
  - To direct targeted funding (for example, by providing a framework for structuring proposals)
  - To allocate funding (for example, against identified priorities or by providing a framework to procurement officers considering digital health proposals)
  - To benchmark against other comparable health systems
  - Other (please specify)
- 

A7. Are there any gaps that the digital health maturity assessments used in your country don't address? What are they, and how have you addressed them?

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A8. Please describe the anticipated value or potential/ realised benefits of this/ these digital maturity assessment(s).

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A9. Which are the major technology vendors used in your country's public/ private healthcare system? Some examples of products include electronic health records (EHR), telemedicine platforms, and cybersecurity solutions.

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A10. Please describe the anticipated value or potential/ realised benefits of using this/ these vendor(s)?

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# Bibliography

- Cresswell, K., Sheikh, A., Krasuska, M., Heeney, C., Dean Franklin, B., Lane, W., . . . Williams, R. (2019). Reconceptualising the digital maturity of health systems. *The Lancet Digital Health*, 1(5).
- Duncan, R., Eden, R., Woods, L., Wong, I., & Sullivan, C. (2022). Synthesizing dimensions of digital maturity in hospitals: Systematic review. *Journal of Medical Internet Research*, 24(3).
- Garritty, C., Gartlehener, G., Barbara, N.-S., King, V., Hamel, C., Kamel, C., . . . Stevens, A. (2021). Cochrane Rapid Reviews Methods Group offers evidence-informed guidance to conduct rapid reviews. *Journal of Clinical Epidemiology*, 130.
- Global Digital Health Partnership. (2022). *Measuring Benefits: An international overview of approaches for evaluating digital health technologies and services*. GDHP.
- Krasuska, M., Williams, R., Sheikh, A., Dean Franklin, B., Heeney, C., Lane, W., . . . Cresswell, K. (2020). Technological capabilities to assess digital excellence in hospitals in high performing health care systems: International eDelphi exercise. *Journal of Medical Internet Research*, 22(8).
- Martin, G., Clarke, J., Liew, F. A., King, D., Aylin, P., & Darzi, A. (2019). Evaluating the impact of organisational digital maturity on clinical outcomes in secondary care in England. *NPJ Digital Medicine*, 2(41).
- Snowdon, A., Hussein, A., Olubisi, A., & Wright, A. (2024). Digital maturity as a strategy for advancing patient experience in US hospitals. *Journal of Patient Experience*, 11.
- Stern, C., Lizarondo, L., Carrier, J., Godfrey, C., Rieger, K., Salmond, S., . . . Loveday, H. (2020). Methodological guidance for the conduct of mixed methods systematic reviews. *JBI Evidence Synthesis*, 18(10).
- Williams, C., Schallmo, D., Lang, K., & Boardman, L. (2019). Digital maturity models for small and medium-sized enterprises: A systematic literature review. *The International Society for*

***Professional Innovation Management (ISPIM) Conference  
Proceedings. Florence, Italy: ISPIM.***

**Woods, L., Dendere, R., Eden, R., Grantham, B., Krivit, J., Pearce, A., . . .  
Sullivan, C. (2023). Perceived impact of digital health maturity  
on patient experience, population health, health care costs, and  
provider experience: Mixed methods case study. *Journal of  
Medical Internet Research*(25).**



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