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### Original frameworks and dimensions.

Table A5. List of original dimensions found in the eHealth-related frameworks of the included articles

Framework	Purpose of the framework	Dimensions
American Psychiatric Association's App Evaluation Framework [1]	To offer clinicians and patients an adaptable scaffold for informed decision making	<ul style="list-style-type: none"> <li>• Gather background information</li> <li>• Risk/Privacy and safety</li> <li>• Benefit/Efficacy</li> <li>• Engagement</li> <li>• Data sharing</li> </ul>
Android Design Guideline [2]	To support designers and developers in creating an app	<ul style="list-style-type: none"> <li>• Animation</li> <li>• Style</li> <li>• Layout</li> <li>• Components</li> <li>• Patterns</li> <li>• Usability</li> </ul>
Areas of focus for feasibility studies [3]	To describe different areas of focus used in diverse types of feasibility studies conducted in the field of cancer prevention	<p>Acceptability</p> <ul style="list-style-type: none"> <li>• (User) Satisfaction</li> <li>• Intent to continue use</li> <li>• Perceived appropriateness</li> <li>• Fit within organizational culture</li> <li>• Perceived positive or negative effects on organization</li> </ul> <p>Practicality</p> <ul style="list-style-type: none"> <li>• Positive/negative effects on target participants</li> <li>• Ability of participants to carry out intervention activities</li> <li>• Cost analysis</li> </ul>
ASPECT framework [4]	To spark discussion about apps and aid clinicians in determining if an app is ASPECT	<ul style="list-style-type: none"> <li>• Actionable</li> <li>• Secure</li> <li>• Professional</li> <li>• Evidence-based</li> <li>• Customizable</li> <li>• Transparent</li> </ul>
Asthma apps assessment framework [5]	An index system to evaluate asthma mHealth apps to select or design asthma apps systematically and scientifically, and to improve quality evaluation standards for apps for chronic and common diseases.	<p>Knowledge</p> <ul style="list-style-type: none"> <li>• Asthma knowledge</li> </ul> <p>Skills training for effective self-management</p> <ul style="list-style-type: none"> <li>• Non-pharmacological strategies</li> </ul> <p>Behavior change strategies</p> <ul style="list-style-type: none"> <li>• Goals and planning</li> <li>• Feedback and monitoring</li> <li>• Shaping knowledge</li> <li>• Social support</li> <li>• Prompts</li> </ul> <p>Design principles</p> <ul style="list-style-type: none"> <li>• Ease of use</li> </ul>

		<ul style="list-style-type: none"> <li>• Usability</li> </ul>
Canadian code of ethics for psychologists [6]	Ethical principles, values, and standards to guide ethical decision making by professional psychologists.	<p>4 hierarchically principles:</p> <ul style="list-style-type: none"> <li>• Respect for the Dignity of Persons</li> <li>• Responsible Caring</li> <li>• Integrity in relationships</li> <li>• Responsibility to society</li> </ul> <p>Ethical considerations:</p> <ul style="list-style-type: none"> <li>• Privacy policies for user data</li> <li>• Secure storage &amp; transmission of data</li> <li>• Credible sources for app content</li> <li>• Evidence for clinical benefit</li> <li>• Obtaining informed consent</li> <li>• Communication of conflicts of interest</li> </ul>
Consolidated Framework for Implementation Research (CFIR) [7]	Description of the constructs associated with successful implementation. The constructs come from a range of 19 frameworks or related theories. The CFIR summarized the range of construct terminology and definitions in a regulatory framework.	<p>Potential barriers and facilitators of implementation or intervention outcomes:</p> <ul style="list-style-type: none"> <li>• Characteristics of an intervention</li> <li>• Outer setting</li> <li>• Inner setting</li> <li>• Characteristics of individuals</li> <li>• Implementation process</li> </ul>
Dimensions of evaluation criteria for mental health mobile apps [8]	To encourage the development of professional guidelines and clinical frameworks for evaluating mobile mental health apps	<ul style="list-style-type: none"> <li>• Usefulness dimension</li> <li>• Integration and infrastructure dimension (incl. privacy and security)</li> <li>• Usability dimension</li> </ul>
Donabedian's factors of medical care quality [9]	To assess and monitor the quality of care for research and quality assurance programs.	<ul style="list-style-type: none"> <li>• Structure</li> <li>• Process</li> <li>• Outcome</li> </ul>
Factors Influencing App Use (modified from Health Belief model and Health Information Technology Acceptance Model, HITAM) [10]	Theoretical grounding for research into the consumer experience of mobile phone apps (focus on barriers and facilitators)	<p>Individual perceptions</p> <ul style="list-style-type: none"> <li>• Perceived susceptibility</li> <li>• Perceived severity</li> </ul> <p>Modifying factors</p> <ul style="list-style-type: none"> <li>• Demographics</li> <li>• Perceived threat</li> <li>• Cues to action</li> </ul> <p>Likelihood of Action</p> <ul style="list-style-type: none"> <li>• Perceived benefits</li> <li>• Minus perceived barriers</li> <li>• Utilization of diabetes mobile phone application</li> </ul>
Framework for Evaluating Patient Engagement, Quality and Safety of Mobile Health Applications [11]	Evaluating patient engagement, quality and safety of mHealth in chronic kidney disease	<ul style="list-style-type: none"> <li>• General app-related information</li> <li>• General medical information</li> <li>• Patient engagement</li> <li>• Quality</li> <li>• Usability</li> <li>• Safety</li> </ul>

Goals, Operators, Methods, and Selection Rules (GOMS) Method [12]	A model of human performance to improve human-computer interaction efficiency by removing useless or unneeded interactions	<ul style="list-style-type: none"> <li>• Goals</li> <li>• Operators</li> <li>• Methods</li> <li>• Selection</li> </ul>
Health Information Technology Acceptance Model (HITAM) [13]	To understand why users accept or reject a health-related technology, and how user acceptance can be improved through technology design.	<p>Health zone</p> <ul style="list-style-type: none"> <li>• Health status</li> <li>• Health belief &amp; concerns</li> <li>• Behavioral beliefs</li> </ul> <p>Information Zone</p> <ul style="list-style-type: none"> <li>• Subjective norm</li> <li>• Health information technology reliability</li> <li>• Normative beliefs</li> </ul> <p>Technology Zone</p> <ul style="list-style-type: none"> <li>• Health information technology self-efficacy</li> <li>• Efficacy beliefs</li> </ul> <p>(Mediating process)</p> <ul style="list-style-type: none"> <li>• Perceived threat</li> <li>• Perceived usefulness</li> <li>• Perceived ease of use</li> </ul>
Health Insurance Portability and Accountability Act (HIPAA) [14]	Federal law that required creation of national standards to protect patient health information	<ul style="list-style-type: none"> <li>• Confidentiality, integrity, and availability of electronic protected health information</li> <li>• Detection and safeguard against threats to the security</li> <li>• Protection against anticipated impermissible uses or disclosures</li> <li>• Certification of compliance by their workforce</li> </ul>
Heuristic evaluation [15]	To identify any problems associated with the design of user interfaces	<ul style="list-style-type: none"> <li>• Simple and natural dialogue</li> <li>• Speak the user's language</li> <li>• Minimize user memory load</li> <li>• Be consistent</li> <li>• Provide feedback</li> <li>• Provide clearly marked exits</li> <li>• Provide shortcuts</li> <li>• Good error messages</li> <li>• Prevent errors</li> </ul>
iOS Human Interface Guideline [16]	To support designers and developers in creating an app	<ul style="list-style-type: none"> <li>• UI Design Basics</li> <li>• Design strategies</li> <li>• iOS Technologies</li> <li>• UI Elements</li> <li>• Icon and Image Design</li> </ul>
iSYScore [17]	To evaluate reliability of a health app, useful criteria before downloading the app, give criteria to developers to improve the quality of their apps	<ul style="list-style-type: none"> <li>• Popularity and interest</li> <li>• Trust and quality</li> <li>• Usefulness</li> </ul>

ISO/IEC/IEE E 29148:2011 standard: Life cycle processes [18]	Life cycle processes — Requirements engineering	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• References</li> <li>• Verification</li> <li>• Appendices</li> <li>• Specific requirements</li> </ul>
ISO/IEC 25010:2011: Systems & software engineering [19]	Systems and software Quality Requirements and Evaluation (SQuaRE) — System and software quality models	<p>Quality in use model</p> <ul style="list-style-type: none"> <li>• Effectiveness</li> <li>• Efficiency</li> <li>• Satisfaction</li> <li>• Freedom from risk</li> <li>• Context coverage</li> </ul> <p>Product quality model</p> <ul style="list-style-type: none"> <li>• Functional suitability</li> <li>• Performance efficiency</li> <li>• Compatibility; Portability</li> <li>• Usability</li> <li>• Reliability</li> <li>• Security</li> <li>• Maintainability</li> </ul>
ISO/IEC 9126-1 standard: Software engineering [20]	Software engineering — Product quality — Part 1: Quality model	<ul style="list-style-type: none"> <li>• Understandability</li> <li>• Learnability</li> <li>• Operability</li> <li>• Attractiveness</li> </ul>
Johns Hopkins Digital Health Scorecard [21]	To propose framework that could form the basis for evaluation of digital health solutions including the following domains: technical, clinical, usability, and cost	<ul style="list-style-type: none"> <li>• Technical quality</li> <li>• Usability</li> <li>• Clinical value</li> <li>• Privacy/security</li> </ul>
mHealth App Trustworthiness (mHAT) checklist [22]	Checklist for mHealth app developers with features or actions required for trustworthy mHealth apps according to end-user opinions	<ul style="list-style-type: none"> <li>• Informational content</li> <li>• Organizational attributes</li> <li>• Social influences</li> <li>• Technology-related features</li> <li>• User control</li> </ul>
Microsoft Design and UI [23]	To support designers and developers in creating an app	<ul style="list-style-type: none"> <li>• Design Basics</li> <li>• Layout</li> <li>• Controls and patterns</li> <li>• Style</li> <li>• Motion</li> <li>• Shell</li> <li>• Input &amp; interactions</li> <li>• Devices</li> <li>• Usability</li> </ul>
Modified HON Foundation principles [24]	To evaluate mHealth apps (promotional page, developer website if available, and the app itself)	<ul style="list-style-type: none"> <li>• Information must be authoritative</li> <li>• Purpose (of the app)</li> <li>• Confidentiality</li> <li>• Information documented, referenced and dated</li> <li>• Justification of claims</li> <li>• (App) contact details</li> <li>• Funding</li> <li>• Editorial &amp; advertising policy</li> </ul>

Multi-dimensional framework for assessing health app quality[25]	To assess health app quality to help researchers select quality measures that account for multiple perspectives	<ul style="list-style-type: none"> <li>• Scientific/clinical basis</li> <li>• Functionality</li> <li>• Usability</li> <li>• Accountability</li> <li>• Impact</li> <li>• Popularity</li> </ul>
Optimized Honeycomb model for user experience [26]	To describe what makes a user good experience.	<ul style="list-style-type: none"> <li>• Findable; Accessible</li> <li>• Useable</li> <li>• Desirable</li> <li>• Credible</li> <li>• Useful</li> <li>• Valuable</li> </ul>
Principles for digital development [27]	To guide organizations & developers in integrating best practices into design	<ul style="list-style-type: none"> <li>• Design with the user</li> <li>• Understand existing ecosystem</li> <li>• Design for scale</li> <li>• Build for sustainability</li> <li>• Be data driven</li> <li>• Use open standards, data, source, and innovation</li> <li>• Reuse and improve</li> <li>• Address privacy and security</li> <li>• Be collaborative</li> </ul>
P5 approach to medicine [28]	To find innovative and personalized ways to improve the overall quality of care	<ul style="list-style-type: none"> <li>• Predictive</li> <li>• Personalized</li> <li>• Preventive</li> <li>• Participatory (social features)</li> <li>• Psycho-educative (UCD)</li> </ul>
RCP Health Informatics Unit clinical app quality checklist [29]	To assess the structure, function and impact of medical apps	<ul style="list-style-type: none"> <li>• Developer of the app &amp; content</li> <li>• Performance</li> <li>• Evidence of outcome improvement</li> </ul>
Simple REuse of software requiremNts (SIREN) methodology [30]	To identify systems descriptions that can be reused (in whole or in part) with a minimal number of changes, reducing the overall development effort.	<ul style="list-style-type: none"> <li>• System requirements specification</li> <li>• System test specification</li> <li>• Interface requirements specification</li> <li>• Software requirements specification</li> <li>• Software test specification</li> </ul>
Technology Acceptance Model (TAM) [31]	To understand why users accept or reject a given technology, and how user acceptance can be improved through technology design.	<ul style="list-style-type: none"> <li>• External variables</li> <li>• Perceived usefulness</li> <li>• Perceived ease of use</li> <li>• Attitude toward using</li> <li>• Behavioral intention to use</li> <li>• Actual system use</li> </ul>
Theoretical Framework of Acceptability (TFA) [32]	A multi-construct theoretical framework of acceptability of health care interventions to assess prospective and retrospective acceptability from the perspective of intervention delivers and recipients.	<p>Influences of acceptability:</p> <ul style="list-style-type: none"> <li>• Affective attitude</li> <li>• Burden</li> <li>• Ethicality</li> <li>• Intervention coherence</li> <li>• Opportunity costs</li> <li>• Perceived effectiveness</li> <li>• Self-efficacy</li> </ul>

Testing standards of practice (OCCOPPQ) and standards for mobile device interfaces [33]	To allow for a qualitative assessment of mobile applications.	<ul style="list-style-type: none"> <li>• Accuracy of the assessment tool</li> <li>• Intuitiveness of its use</li> <li>• Scientific basis</li> <li>• Visual aesthetics</li> <li>• Language</li> <li>• Advertising</li> <li>• Presence of a user manual</li> <li>• Management of results (their accuracy)</li> <li>• Protected access to data</li> </ul>
Three types of evaluation factors [34]	To evaluate health care smartphone apps	<ul style="list-style-type: none"> <li>• Contents</li> <li>• Technology</li> <li>• Interface design</li> </ul>
Unified Theory of Acceptance and Use of Technology (UTAUT) [35]	To understand why users accept or reject a given technology	<ul style="list-style-type: none"> <li>• Performance expectancy</li> <li>• Effort expectancy</li> <li>• Social influence</li> <li>• Facilitating conditions</li> <li>• Influencing factors</li> </ul>
extended Unified Theory of Acceptance and Use of Technology (UTAUT2) [36]	To extend the UTAUT to study acceptance and use of technology in a consumer context.	<ul style="list-style-type: none"> <li>• Performance expectancy</li> <li>• Effort expectancy</li> <li>• Social influence</li> <li>• Facilitating conditions</li> <li>• Hedonic motivation</li> <li>• Price value</li> <li>• Habit</li> <li>• Influencing factors (age, gender, experience)</li> <li>• Behavioral intention</li> <li>• Use Behavior</li> </ul>
User-centered design [37]	A design process to define end users' key components of apps.	<ul style="list-style-type: none"> <li>• End user involvement</li> <li>• Iterative design process</li> </ul>

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