

Description of criteria domains by concepts and sub-groups

Concept	Criterion	Sub Groups	
Usability	Ease of Use	Users need to exert only the minimum amount of effort to activate the desired features (e.g. auto-complete, click instead of type, minimal choices).	
		Users are able to complete tasks quickly, accurately and completely.	
		The program meets technical needs (functionality, mobility, visibility, and durability) according to the settings in which it might be used.	
	Learnability	The program is intuitive, self-explanatory, and easy to learn at first use. Minimal, if any, training is required.	
		Users can easily recognize and comprehend the program's visible metaphors (e.g. icons).	
		Users have easy access to information about how to use the program (e.g. guided tour, help features, foreign language support).	
	Speed	The program's features/pages load very fast.	
		The program has fast responsiveness.	
	Errors	The program is bug free.	
		The program has none or only minor errors (e.g., only a cosmetic problem, minor usability problem, with no major usability problem that prevents user from using the program).	
		The program is designed to decrease the amount of user-based errors.	
		Users are provided with means to recognize, diagnose, and recover from errors (clear error messages that constructively suggest a solution, a mechanism to ask for systematic manager help etc.).	
	Navigation	Users are able to move between different locations or to find information through minimal movements (e.g. number of clicks, switching between typing and tapping).	
		Users can move between screens in a logical, appropriate and uninterrupted manner.	
		Users' navigation interactions (taps/swipes/pinches/scrolls) are consistent and intuitive across all components/screens.	
		The program's navigation tools are convenient and easy to use (e.g. labels are in proximity to their related data fields, easy return to "home page").	
		The program avoids unnecessary links, layers, or clicks between pages.	
	Reliance on External Sources	The program is operable with minimal investment or intervention from external sources (e.g. the need for components that should be installed to properly view the program is minimal)	
	Visual Design	Aesthetic Design	The program looks attractive (aesthetic, pleasant, provides a good feeling).
			The program's graphics are used properly (colors, fonts).
The program's different visual items (e.g. images, text and numbers) are used where visually appropriate.			
The program's design appears appropriate for its purpose and concept.			
The program's design is unique, and reflects originality and creativity. ^b			
The program has a competent look and feel.			
Layout		The program's layout is well structured, logical and ordered.	
		The program has minimal visual interruptions (e.g. pop ups, advertisements).	
		The program's layout is consistent when applicable. Understanding how one screen works helps the users understand how other screens work.	
Size		The program's font size enables easy reading from a normal viewing distance.	
		The program's screen elements (e.g. buttons, icons, menus, content) are appropriate.	
		The program's major headings and subheadings are easily identifiable.	

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User Engagement	Captivation	The program piques the users' curiosity and interest (i.e. attract users to use it as needed).
		The program features challenge the users and stimulates learning.
	Content Presentation	The program's content is presented using the right/appropriate mix of media features (video/audio/text/graphics).
	Interactivity	The program includes interactive features which enable user input and reaction.
		The program's interactive features are appropriate and of high-quality.
		The program's interactive features are various and diverse.
	Level of Irritation	The program avoids irritation in the users' experience (e.g. by controlling notifications/alerts/sounds or avoiding irritating colors/fonts/sounds/expressions, pop-up advertisements etc.).
		Users can customize potentially irritating functionalities (notification emails, drip emails, just-saying-hi emails, SMS /alerts/sounds).
Personalization	The program enables personalization (when applicable) with the purpose of relating to the user as a unique person and responding to their specific needs.	
Targeted/ Tailored	The program's features are tailored to the usage context of the target group (potential needs, interests, personality etc.).	
Right Time and Place	Users are given information, feedback, and assistance at an opportune time and place.	
Content	Evidence Based Content	The program's content presents reliable, evidence-based information.
		The program's content follows accepted evidence-based techniques/interventions relevant for achieving its desired clinical aim. ^a
		The program's content accurately reflects the most current evidence based research.
	Information Provision	The program's information categories (e.g. tables, graphs, text) are displayed in a clear, easy to understand, manner.
		The program's content has a professional look and feel (e.g. no spelling errors).
		The program's content is delivered in a clear manner that meets the users' cognitive abilities (e.g. easy-to-read text: level of language, avoidance of jargon, information appears in a natural and logical order).
		The program's content is delivered in way that is considerate of users' perspective, and attempts to strike an appropriate tone (e.g. an enthusiastic tone may not be appropriate for suicide prevention applications).
		The program's content is delivered in an unbiased manner (e.g. promoting self-product in an overt manner, preachy approach).
		The program's content covers information at an adequate breadth and depth.
	Complete and Concise	The program's content covers relevant information avoiding overload or redundancy.
		The program's information is presented in a concise manner (e.g. long paragraphs are summarized with bullet points).
		The program's goals, clinical aims, and beneficial outcomes are clear.
	Clarity About the Clinical Aim	The program offers clear information about its target population and specifies who should use the program and who shouldn't (e.g. symptoms).
		The program offers clear information about the appropriate framework in which it should be used (e.g. adjunct to treatment, stand-alone).
		The program's description matches its content (e.g. on homepage, app stores, banners).
The program offers links to further information when needed.		
Additional Resources ^a	The program offers links that are relevant, appropriate and operational.	
	The program encourages/inspires the users towards achieving the therapeutic goals.	
Behavior	Call to Action	The program encourages/inspires the users towards achieving the therapeutic goals.

Concept	Criterion	Sub Groups
Change / Persuasive Design^a		The program's therapeutic goals/activities are specific, salient, well defined and measurable.
		The program offers proper information on how to reach desired goals (e.g. problem solving techniques, goal setting techniques, overcoming potential obstacles).
		Users can choose their own goals.
		The program uses prompts/triggers at an opportune time aiming to help users achieve their goals (e.g., reminders, inspirational emails).
	Clarity of Therapeutic Pathway	The program has a work flow that is tunneled, simple to understand, and includes tutorials, where applicable.
	Clarity of Therapeutic Rational	Users can easily understand how working through each action item (e.g. assessments, exercises) provided by the program would lead to the desired therapeutic outcome.
	Clarity of Expectations and Relevance	The program offers an explanation of the intervention framework and sets clear expectations from the users.
		The program convincingly advocates the intervention's relevance (e.g. relating to the user's own state, difficulties in making/sustaining a change, motivation and consequences for using it).
	Load Reduction	The program makes it easier for users to engage in therapeutic activities by providing them with the relevant tools "in house".
		The program's supporting features make it as easy as possible for users to complete desired activities (e.g. enable user to print a page of goals if it needs to be displayed) without taking away the feeling of achievement in completing therapeutic activities.
		The program aims to lower the perceived effort in completing desired activities in order to increase the user sense of ability and therefore, their occurrence (e.g. graded tasks, reduction of complexity, easy implementation, specific step-by-step guidance).
	Rewards	The program's technology recognizes desirable achievements (e.g. using the program, therapeutic investments) and acknowledges them.
		The program provides appropriate rewards in response for desired achievements (e.g. praise, social recognition, credit points).
		When applicable, rewards design incorporates user activities that are documented / recognized in a way that makes users more prone to keep doing them (i.e. investments; e.g. keep all calorie intake reports in the same place).
	Data Driven	The program collects objective assessments on user state when applicable (e.g. digital footprints from passive sensors, identification of physical movements through console to address real appropriate physical movement).
		The program collects ongoing self-report information in relevant cases (e.g. on users' psychological state).
	Adaptive	The program's therapeutic pathway adapts and changes based on users' state.
Ongoing Feedback	The program provides continuous information on users' progress (e.g., how much left to complete a task, past progress vs. current progress).	
	The program offers accurate, and easily to understand feedback.	
	The program comments precisely on the users' current practices, strategies and achievements.	
	The program's feedback is tailored and based on the users' characteristics and personal data.	
Influence of Social Presence^a	Social Network of Support	The program provides features that enable social support for users (e.g. online group or community, a function to alert a designated person when a medication dose is skipped).

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	Social Learning	Users are given an observable sample of the performance of the desired behavior (e.g. in-person, via recorded film), for them to aspire to or imitate.
	Social Comparison	The program provides an opportunity for users to compare their performance to other users.
	Normative Influence	Users are given information about others' normative behaviors and experiences.
	Social Monitoring	Users can see whether others are using the program and others' current state in a way that promotes desired behaviors.
		With user's permission, activities can be monitored by others (e.g. other users, concerned significant others) in a manner that promotes desired behaviors.
Social Rewards	The program offers public recognition for users who adopted desired behaviors.	
Therapeutic Alliance^a	Basic Acceptance and Support	The program's features and content demonstrates understanding and empathy towards the user, genuine care, and relates to the users in a positive/respectful fashion (through positive tone, reassuring messages, reflective listening features etc.)
	Nurture of Positive Therapeutic Expectations	The program projects professionalism, authority and trustworthiness (through tone, narrative, convincing presentation, reliable "look and feel") and is meeting the users' exact needs at the right time.
		The program encourages users to expect beneficial outcomes from utilizing it and to rely upon it within the medical context.
	Nurture of Partnership	The program encourages users to agree with goals, outcomes and general therapeutic/behavioral contract.
		The program enables the users to decide on their desired goals/outcomes when applicable.
		The program provides support for shared decision-making (e.g. by suggesting things to discuss with family, friends, doctors or other health professionals concerning treatment choices).
Relatability	The program offers a good representation of a human factor that is easily relatable within the therapeutic context/process (e.g. a professional character who directs the users throughout the program; online community of supporters; text messages that create such projections through language, sender's identity, and responsiveness; tone of voice, approachable language; robots which apply human-like movements).	
General Evaluation	Appropriate Features (to meet the clinical aim)	The program's features (e.g. program's tools, content, methods, directions) are sufficient to meet its therapeutic goals.
	Likability	The users are satisfied with the program (e.g. would come back and use it again, recommend it to others, would be willing to pay for it).
		The users perceive the program as likely to help in achieving the clinical aim.
User's Ability & Motivation	There is an appropriate balance between targeted users motivation and ability to utilize the program, to reach the therapeutic aim (i.e. higher motivation covers for lower ability and vice versa).	
Classification	Accessibility	The program's price is accessible.
		The program's language(s) increases its accessibility.
		The program can be used on an accessible device (e.g., smartphone, wearable, computer, console, virtual reality system).
		The program accommodates users with disabilities (e.g., cognitive, motor, visual impairment).
		The program can easily be found through relevant entities (e.g., main search engines, app stores, catalogs).
		The program is available when needed (e.g. 24/7)

Concept	Criterion	Sub Groups
	Target Audience (classification themes)	Intended users (dinician, patient, parent/children/sibling/concerned significant other) .
		Clinical condition (addiction-related, chronic disease, medical, health related behavior, mental illness, well-being).
		Age.
	Program's Aim	Assessment, Monitoring, Awareness/Education/Information, Adherence to Treatment, Health Care Management, Prevention, Treatment.
	Settings of Use	Clinical Setting (hospital, clinic), Remote.
		The program is designed to be used as: adjunct to treatment, standalone.
Credibility	Owner's credibility	The program's source is legitimate, reliable and experienced in developing such programs.
		The program offers source's contact details (e.g. office address, email etc.).
	Maintenance	The program is frequently updated.
	Team/Advisory Support	The program has a qualified team/advisory support board with relevant experience and reputation, able to lead the product design.
	Third Party Verification	The program has been verified by a legitimate/reliable source .
		The program has received a good review by a legitimate/reliable source .
		The program was endorsed by a legitimate/reliable source (meaning the source has recommended the program to its members/affiliates or asked relevant stakeholders [e.g., physicians] to refer people to this program).
	Empirical Evidence for Successful Implementation	The program has a large number of user's/downloads.
		The program is being used within a large health system or by a large group of clinicians.
		The program demonstrates high user engagement with low retention rates (examined by a third party).
Research Support	The program boasts strong research support (such as RCTs in which the program was found to be superior to an appropriate placebo or equivalent to acceptable evidence-based treatment groups).	
Privacy/ Security	General Privacy Notifications	Users are <i>informed of the data journey</i> in detail so they understand all sources of data exposure.
		Users are notified about how their <i>personal identifiable information</i> will be kept confidential and secured.
		The program includes a section requiring the approval/supervision of a legal guardian in relevant cases.
		The program notifies users about how gathered data may be used (e.g., for commercial reasons).
		The program <i>explicitly tunnels users through the terms of use</i> (privacy/data wise) before program utilization.
	Privacy Embedded within Social Platforms	The program enables users to keep identifiers private (as the default setting).
		The program clearly specifies when the information will be seen by other users/members even if the data does not contain identifiers (e.g. when they are in a particular zone where data is not kept private).
		The program warns users about providing private <u>identifiable</u> information (e.g. name, health information, home address) to other users on the platform.
	Data Security	The program appropriately secures user private data, in terms of <i>device</i> (password-protection, appropriate authentication etc.) and <i>servers</i> (encryption/protection/de-identification of data).
		The program encrypts all communication with the user, and between the user and relevant third parties when needed.

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		The program avoids the transmission of private data to uncertified sources but rather prompts the user to enter the system in an appropriate way in order to view the encrypted message.
	Documentation of Access to User's Private Data	The program documents login activities to platforms/data/servers in order to enable the identification of people with and without certification who may potentially be able to access user personalized data.
	Regulation Compliance	The program explicitly reports being HIPAA compliant (or equivalent outside of USA) and explains what that means (relevant for personal health information gathered under business associate agreement/by healthcare systems/providers).

^a mostly relevant for intervention programs.

^b a subgroup that was identified but was not deemed important (by the classification team) for successful eHealth programs.

Reference

Baumel, A., Birnbaum, M. L., & Sucala, M. (2017). A Systematic Review and Taxonomy of Published Quality Criteria Related to the Evaluation of User-Facing eHealth Programs. *Journal of Medical Systems, 41(8)*, 128.