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Specifying Usage Environments for Interfaces of Mobile Health Apps

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Abstract
With mobile health Apps, it is vital to get a feel of the user environment in order to develop interface-based applications that are easy to learn, respond and facilitate such healthcare requirements. Context refers to environmental, situational, and personal details that affect the interaction of a user, e.g. the user is in a particular location, the capabilities of the device, its connectivity, time limits, the physical/emotional situation of a user. This paper will discuss the design principles by which contextual factors can be established systematically, modeled, and incorporated into a mobile interface when designing the mobile interface in a healthcare App. Through the examination of realistic situational use of the interface, the study identifies adaptations of interface components layout, input and feedback to variable and changing conditions, such as in case layout, input and feedback mechanisms. These results support the need to consider context-aware design in enhancing usability, engagement and clinical relevance which in turn increases patient outcomes and the efficiency of healthcare delivery.

Keywords: ***Context-aware design, mobile health (mHealth), healthcare user interfaces, usability, adaptive UI, patient engagement, contextual modelling, user experience, medical informatics, human–computer interaction.***

1.Introduction
Context is a concept that has always interested scholars conduct research in various technologies and human computer interaction because it plays a fundamental role in determining the manner in which systems respond to user needs when subjected to real-world conditions. The term has been defined differently in various contexts of application, i.e., in linguistic contexts in the context of human conversation studied by Winograd, its applicability in wearable computer applications environments studied by Pascoe, and more generally to situational awareness, as proposed by Dey and Abowd. The similarity of these explorations is that they have already come to the understanding that context is the basis of information which lets adaptive, intelligent systems adjust their actions dynamically. Due to the popularity of portable technologies and the trend leading to their dominance, developing software that makes use of context cues has become an extremely crucial research avenue. Healthcare is one such area that will really benefit because in real time, precise and context-sensitive information not only can optimize the processes in running the healthcare organization it can also be used to enhance patient outcomes. The contextual considerations are of apparent importance, but their systematic incorporation into the process of mobile healthcare solutions production is relatively underdeveloped, which opens it as a source of innovation(1).

The concept of mobile devices, namely Mobile User Interfaces (MUIs) in a healthcare setting, is critical in overcoming possible disparities between research ideas and clinical practice. MUIs that are effective can help a healthcare professional to channel their activities in a highly accurate, faster, and effortless way especially in areas that demand the maximum level of caution, like in hospitals. Context-awareness within MUIs may be applied in two important steps: the design process, where an understanding of probable user situations can be used in the interface design and navigation process, and in the runtime process, where the system can sense a change of situations and adjust in response. The application of mobile technologies in health, I think, has already shown its usefulness in terms of spreading public health alerts, facilitating remote consultations, tele-diagnosis and treatment, monitoring the patients, and automating administrative processes. However, at the same time, their implementation into clinical practice is usually limited by the issues of their reliability, privacy concerns, and possibility to be adapted to the existing systems as well as ease of usage of their interface. The stakes in the healthcare context are extraordinarily high personally-misinterpretations or delays caused by poor interface design can mean life or death-so any implementation of mobile solution should be highly specific to the working realities of the clinical setting.

The key assumption behind the idea of including context in the design of an MUI is the realization that the environment of healthcare is dynamic and multidimensional, whereas its users are diverse. Even a single hospital may include different hospitals, departments, wards, and specialized units, with different workflow in each of them, spatial organization, environmental factors and user subdivisions. Everyone including nurses, doctors, pharmacists, technicians, and even administrative staff can have interface with the same system but in different and very stringent conditions(2). As such, a one-size-takes-all interface does not tend to perform well all along this spectrum of use cases. Context-awareness embedded in the MUI design DNA would enable developers to introduce adaptive systems to adjust to the differences in the level of user expertise, tasks, environment (light, noise, mobility), and device limitations. This, in its turn increases user acceptance, decreases the level of cognitive burden, and decreases the possibility of making mistakes.

FIGURE 1 Context-Aware Mobile User Interfaces in Healthcare

In this case, the importance of this approach can be exemplified by how a context-sensitive MUI can change the recording of patient vital signs, an everyday but highly important nursing assignment. The lawyers have taken the position that this transaction is a transfer because it is like the transfer of something, a reading, like temperature, blood pressure, oxygen saturation measurements, and others that are manually recorded on paper to be later recorded on an electronic record at a workstation. Not only is this time consuming, but also inaccurate as far as transcription errors are concerned. A well-designed interface design that is context-sensitive in a mobile device may also promote instant digital documentation at the point of care than automatically altering the input interface modes to meet a situation- The switches in large fonts to rapidly read in darker areas, silent setting in shared patient room, or voice input with hands occupied. The context aspect of the scenario involves many facets such as the physical place, the time at the time of day, the weather, type of job, and the personality of the individual. The more these factors are understood and the richer the system modeling them the better it is able to model its behavior, towards them.

Construction of such systems, however, goes beyond intuitive ideas, it requires a definite structure of context to be developed around finitizing applied to the field of healthcare. The given paper introduces a new approach built on the idea of separation of concerns as dividing context into two levels: the basic one, containing all universal situational parameters like location, time, etc., and the domain-based context which involves the application-specific parameters like user role, tasks, and pertinent data objects. Through defining context in this organized way, designers will be able to better systematically come up with how MUIs approach and adapt to differing circumstances, making design more congruent, and scalable. Moreover, the concept of the context descriptor gives an opportunity to present a visualization of the context through the end user despite of the three-sided criteria of the context description, connecting the stereotypes of users, who are broad models of behavior and user preferences, with parameter specifications of the environment and task situations(3).

This conceptual framework is to be built up throughout the remaining of the study. It starts with a narrow-downed case scenario that is a hospital ward to make the discussion relatable to a real-life healthcare setting and then it gives an overview of how other researchers have described and used the concept of context in computing. This literature review helps to pinpoint the major gaps in the literature in the field and provides the rationale behind the subsequent study steps, i.e., the proposed method of MUI development which focuses on adopting the top-down, task modeling, and context descriptor identification strategies. The paper next explains the formal description of context and depicts how the context can be operationalized to produce adaptive interface behavior in healthcare

Volume 1, Issue 2 | October-2025
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environments. Lastly, the discussion ends by concluding on the implications of such a characterization to the practical deployment, and research currently being carried out to come up with field testable prototypes.

2. Views on Context in Interaction Design and Computing

1. The predicament of context definition

Context is a familiar everyday word and most individuals like it or dislike it, they have an intuitive knowledge of what it is. However, as it is translated in specific areas like context-aware computing or adaptive software systems which are technical in nature, this perceived simplicity breaks down into complexity. It does not have a single comprehensive definition that can simultaneously suit all researchers in different fields. Situation is at times invoked interchangeably with context, although there are differences made between the two terms within the context of some bodies of work. A crucial operational definition is necessary to software engineers, otherwise it becomes guesswork in compiling systems with the capability to sense and adjust to their environments. Most authors concur with the position that no system can ever be termed as context-aware unless such a system can ultimately detect relevant parameters in the environment as well as among the users, appropriately interpret these parameters as familiar contextual conditions and subsequently alter its actions accordingly. Such behavioral adjustment may include changing the presentation of information to changing the services available as well as the automatic responses(4).

2. State representation as a context

Computationally speaking, we may view context as another means of formalising the notion of state within the field of computer science. In the same way that a system state is modeled as a vector of parameters, context is modeled as an organized set of variables of pertinent entities, states, and relations. Notably, context is domain specific, different context is highly relevant in a healthcare ward compared to e-commerce platform or even a social networking application. Such participants could involve some physical places, digital artifacts, human participants and the work they do, and also the resources or objects they engage with. These variables may interact in complicated fashion and are limited by the objectives of a certain application.

3. The background of the previous studies

Many other researchers have also built upon the definition and models of context, but they all represent the attention of the respective fields. As an example, Dey and Abowd design context in accordance with four essential context types, i.e., Activity, Identity, Location, Time built around the possibilities of how this information can be used by systems: to report relevant data, perform some actions, or label content due to its future retrieval. Schilit and Theimer discussed the role of context within the context of mobile access to information focusing upon location as one of the important dimensions. Pascoe took the look of wearable computers, and context as a collection of sensed parameters of the environment, and proposed a “Context Information Service” (CIS) in which systems could draw information hence discounting the existence of context. Further research by Pascoe et al. brought in the concept of universal context model that was interested in connections between objects that allow more generally applicable environmental inference, e.g., “is-in” as the containment relationship between objects used in representing places, or “is-with” as the proximity of objects.

4. Context dimensions of internal and external contexts

Other authors, e.g., Gwizdka, distinguish between an internal and an external context. Internal context means own condition of a user, focusing on work, personal experience of the user, communication activity and his/her emotional mood. In contrast, external context measures the environmental features like location, immediate persons or devices, and time related attributes. This difference is especially applicable to adaptive systems in healthcare where internal context may focus on determining how willing a clinician may be to interact with a system and external context may declare which interaction style would suit the task best at a given time.

5. Context of human interaction and communication

In a linguistic perspective, Winograd looked at context as the context of the environment within which human talks take place and showed its relevance in meaning comprehension. He warned of trying to find universal definition, citing absence of conceptual frameworks and tools of managing context. His work also cited various architectural models e.g.: widget, infrastructure and blackboard, which can be used as the frameworks of forcing background context into the interactive systems. Such models differ in the manner in which they incorporate context recognition, system logic and adaptation of the user interface(5).

6. Context based on fusion of sensor data

Flanagan and co-authors paid particular attention to the formation of higher-order context considering a combination of data about different sensors e.g. accelerometers, microphones, environmental sensors. Using the example, a system may deduce that the user is walking through a busy street during the evening time and is using the phone by correlating motion, sound, light and time. This shows that context can in fact be greater than the combination of its parts-when mixed signals are combined to form a unitary picture of the situation.

7. Ontological accounts of context

Korpip and Mantyjarvi followed an ontology-centred approach to context awareness, particularly in the case of mobile devices. Their idea was to organize sensor-driven observations into a semantic framework so that devices could make informed changes to brightness of a display, font size or page geometry. They also included the significance of the levels of confidence in the sensing; insufficient understanding of the context can also result in inappropriate behavior of the system, especially critical when the system operates in a safety-critical setting as in healthcare.

8. Design approaches to context

Context Savio and Braiterman explored the impact of the context shaping the mobile interaction in design perspective. They conceptualized it in terms of interface, task, user attention, goals, activities, environment, and culture dimensions, although they did not explicitly undertake a categorization effort on such dimensions, only arguing that layers of interaction are influenced by situational factors.

9. Healthcare MUI design implications

To generalize these views, the following are some of the lessons to be learned when creating user interfaces on mobile technology, especially within a healthcare context. First is adaptation to be performed both during the design phase (predicting typical patterns of usage of the context) and during the run time (adapting to the prevailing conditions). Second, context ought to be modeled at several levels including the simplest environmental attributes, task-thematic related tasks, and user features. Third, user modeling is key: clinicians vary in their technology comfort level, physical abilities and desires in dealing with technology, and these parameters directly influence their adoption in the system(6). Fourth usability and user experience are not secondary aspects, they are necessary to using toward making sure that context-aware MUIs provide actual benefits in clinical practice instead of subsequent underutilization or discarding.

3.An Empirical Situation in a Hospital Care Unit

In order to have a better idea of how context can influence the design and performance of mobile user interfaces (MUIs) in the context of health care, it indeed is beneficial to zero in on a real live setting instead of just talking theoretically. It is helpful to take the example of the hospital ward: one of the most complicated micro-environments in the setting of a healthcare institution, where a variety of tasks, actors, and interactions meets. Wards make up a complex system of a large facility in urban hospitals that consists of emergency departments, diagnostic labs, imaging services, surgical operating rooms, outpatient facilities and subspecialty divisions of care. All these regions operate in the form of service units that play a role in promoting the continuity of treating patients. However, what would otherwise not be noted in the ward setting is the continuous flow of patient monitoring, administration of treatment, and interprofessional interaction. In this context, nursing services are a backbone of the daily activities of clinical practice, which provides a perfect sub-setting of how the context-sensitive MUIs can be deployed.

The nursing duties in a ward are information based and physically taxing. The responsibilities of a nurse may involve observing vital signs, giving medicine, writing patient reports, cooperating with physicians, and catering to immediate demands, which is usually within an hour. The simplistic seeming but not at all simple process of taking and documenting patient vital signs definition, temperature, heart rate, blood pressure, respirations, oxygen saturation, pain levels, fluid I/O and wound closure. Though a matter-of-course practice, the procedure is essential to determine whether there were changes in the condition of a patient and whether surgical decisions should be made. These measurements are made frequently and the frequency varies anywhere between hourly and few times a day, hence being dependent greatly on the clinical situation. Historically, nurses could scribble readings on little 3 x 5 paper slips in their pockets and later on transfer data to paper charts or electronic medical records (EMRs) on a central workstation. This method has some inherent weaknesses, that is, it is possible to have mistakes in transcription, other personnel may not get the information right away, and delays in data input may encourage any future decision-making(7).

Volume 1, Issue 2 | October-2025
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In a workflow with modernization, each nurse might have a mobile device with which they are personally linked to the information system of the hospital. The nurse would be able to input readings into the EMR at the point of care, literally, at the bedside, hence accuracy and timeliness. This kind of a system may be structured to operate even in the offline mode automatically synchronizing when network is restored. Nevertheless, it still must have in mind that in order to be truly effective, such a tool should be intelligent in terms of its reaction to fluctuation of user capability, environmental condition, and task-specific requirements. As an example, a well-lit department late in the day may be suitable where a standard keyboard with audible key strokes would be suitable. However, in a low-light, multi-bed hospital space at a late hour, clicks of the input might irritate sleeping patients, and fine print may be difficult to read- nearing the necessity of silent input, higher contrast displays and the use of bigger text components.

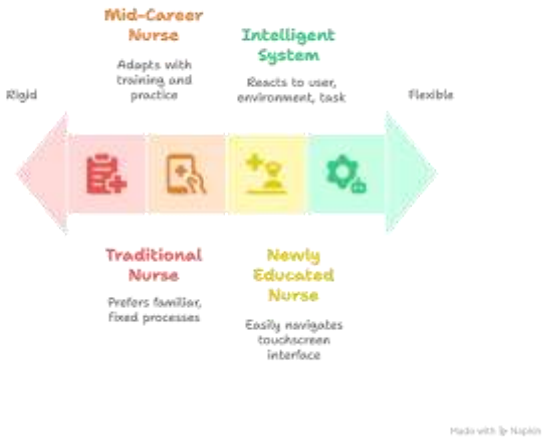

FIGURE 2 Mobile user interface design adapts to user and environment.

These accommodations are of greater significance as we could appreciate the variance that would make up the people using the same. Mobile technology is not quite as familiar or comfortable to all nurses. A freshly educated nurse who learns to work with digital health processes can easily go through a touchscreen interface. A nurse in the middle stage of his/her career may be able to adjust but would like to train and practice before using a new application intensively. A nurse who has spent decades of her/his career in the field might be unwilling to change the fixed paper-based patterns and view mobile devices as inconvenient or even intrusive. Designing without making allowances of these variations is dangerous of producing tools which are inconsistently embraced and, thus, end up never achieving their expected gains. With the inclusion of user models or as they may be called stereotypes, in designing MUI, thus, developers could anticipatively deal with variations of skills, preferences and adaptability.

Those considerations also exist in the situation in the ward when ward adaptation does not merely deal with flexing the aesthetics of interface but rather with adapting the functionality to meet situational requirements. As an example, a nurse can be busy walking between the patient rooms and holding medical equipment in their hands, so a voice command or gestural controls navigation can be more suitable than typing the data using the keyboard. Where contamination control is of paramount importance, as in the isolation rooms, interfaces may have to be accessible under protective gloves or even by touchless operation. In case the infection control policy of the hospital requires the device to be disinfected between two patients, the MUI may both trigger and automatically note compliance measures. These attributes are not necessarily applicable everywhere but extremely crucial under specific circumstances- which explains why context-aware design is not an auxiliary feature but is a necessity.

It gets complicated further by interprofessional interaction. It is not uncommon to find nurses engaging physicians, pharmacists, physiotherapists and dieticians to align patient care. It could be simplified by designing a context-aware MUI, which would incorporate secure messaging or task handoff capabilities, following some level of context-specific customization such as based on urgency or recipient role. As an example, a message marked as urgent to a physician on a call might set off a special notification mode whereas regular updates to a dietitian may

be held pending his or her next scheduled update. The ability to use such smart prioritization needs MUI to be sensitive to role-based context as well as the environmental and task context.

Such a hospital ward is an almost concise illustration of how contextual characterization is important. The sheer magnitude of the scenarios to consider in the morning rushes, night shifts, emergency responses, infection control procedures, new staff training periods, and shifting the guard from one shift to another serves as good evidence that even a narrowly scoped healthcare sub-domain can be associated with an enormous scope of variability. A system that works identically under every circumstance may be frustrating to the user, slows down work, or creates mistakes. On the other hand, a system that can adapt to such fluctuating circumstances in a smooth fashion can easily turn out to be a reliable resource instead of being another burden.

Medication administration, bedside diagnostics, and patient education are also aspects of ward activity; the application of the same principles go beyond the sphere of nursing. In both scenarios, the physical setting, cognitive exertion and interaction limitations influence the manner in which the user would be using the mobile technology. Appreciating the clinical design of the interface requires a profound comprehension of these factors since it allows developers to approach systems that integrate into clinical practice with ease and fluidity, at a level that sustains human aspects of care, instead of threatening it(8).

4.A Methodical Approach to Context Development

Creating a reasonable mobile user interface (MUI) to develop the healthcare is not an issue of picking up pretty pictures or placing buttons on some display. MUIs can be required to achieve a very demanding usability threshold in clinical setting usually under time-sensitive circumstances. To attain this; a methodological manner has to involve the combination of contextual knowledge since the onset of the designing process. The approach presented here is top-down and designed in such a way that general objectives are formulated and gradually transformed into the specifications of the designs that are further clarified by the means of in-depth task and context analysis. This will make sure that the final product is not only addressing the demands of the clinical work of healthcare professionals but also changes easily with the fluctuation of the working process.

1. Identification of domain and goals

It is necessary to define the field of application clearly and determine the key aims of the MUI in the first step. In healthcare, domain is broad meaning it could encompass surgery, emergency, or chronic care management, but narrowing down to a set that is small and manageable helps in clarification. As an illustration, the area may be, “nursing services in a hospital ward” with the task of designing an interface to take patient vital signs. Its design should take into consideration the diversity of the users, which may include newly trained nurses all the way to senior practitioners and expect contextual challenges of variable lighting, noise level, and confinement of motion. This goal will serve later to set all of the design choices.

2. The thorough task analysis has to be done

When the domain is determined, a thorough task analysis has to be done to describe the actions being undertaken by the users within the domain. When it comes to nursing services, the assigned task could be an instance of entering the vital signs one by one, uploading information to the hospital database, or correcting inaccurate data and providing on-time updates about the status to the rest of the personnel. Individual tasks are then linked to the conditions under which they are activated (when they are carried out) and what they are expected to deliver (what stands as completion). The given mapping assists the design team to visualize not only what the interface is supposed to do, but also under what conditions the interface is compelled to deliver those actions(9).

3. Finding context descriptors

Task analysis by itself is not enough unless it can be combined with a lot of analyses of the contextual situation in which the tasks are actually taking place. Here context descriptors are involved. A context descriptor is a small understandable phrase that states a state of affairs that is likely to modulate the behavior of an interface. Examples will be: User is in isolation room, hands are busy, lighting is low, or the level of noise is high. Such descriptors may be defined by various sources, such as environmental limitations, physical condition of the user, as well as factors related to the workflow. Furthermore, user model, which implies generalized characteristics and preferences of user groups, can provide such descriptors as, e.g. “Needs the font size to be big” or “Wants as few interactions with the screen as possible when multitasking.” All of these descriptions comprise the basis of the adaptive behaviors in the MUI.

4. Construction of flexible interface characteristics

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Having ready the duties and the context descriptors, the next intensity is to validate what areas of the interface ought to become adaptable. The features which could be adapted may comprise size and design of UI components, input medium (touch, voice, stylus), text contrast, audio feed-back and navigation. As an example, a nurse operating in a dark room may require a high contrast screen whereas a nurse in a loud ward may prefer haptic feedback over audio messages. This set of flexible parameters must be connected directly with the descriptors of the context in such a way that the system may implement corresponding corrections whenever specific conditions have been identified.

5. Graphing and depicting adaptation logic

The knowledge that allows adapting the MUI to such changes must be formulated formally so that the MUI should be capable of making them practically. It can be accomplished through different types of approaches, e.g., rule-based systems, decision trees, or the model-driven architectures. An example on a rule-based might state: “When (location = multi-patient room) and (time = night) and (light = off), then turn off click sounds on the keyboard.” Lodging such rules in form makes such changes to become coherent, verifiable, and manageable. It also permits the system to be expanded in the future as new rules get introduced with new contexts discovered.

5.Conclusion

When it comes to mobile healthcare technologies, in the space that is developing rapidly and keeps on evolving, the opportunity of a system fitting user interface to the various and constantly changing circumstances in the clinical settings is no longer a luxury, but a needed requirement. This paper has made known the context is not a unitary or universal construct but a complex set that has to be adjusted accordingly to the sphere to which reule is used. In the case of healthcare, including that of a hospital ward in specific, context can include not only large, background parameters like geographic placement, chronological moment and surrounding environment, but also narrower, domain-specific dimensions, such as the role of the user, structure of the tasks in that domain and even the data objects of those tasks. With the specific distinction between these two levels, basic context and domain based context, designers have a better structure on what to adapt to the interface, when the adaptations ought to take place, and how to do so without compromising the familiarity of the user to the system.

The suggestion of the term the context descriptors is one more step towards developing a gap between the theoretical models and the real practice. Such descriptors, which are etched out of requirement-gathering efforts including job-flow observation, interviews, and usability testing, convert mushy notions of context into practical, actionable cues of interface modification. They enable systems to react in manners relevant to the case together with being in keeping with the necessity of the user by either modifying input methodologies, internet management plans, or feedback procedures. The representation of user stereotypes, in its turn, reflects the understanding that in the same profession, i.e., in the case of nursing, there might be a significant difference in their level of technology skills, their preferred communication patterns, and their readiness to change. Thinking these variations in the designing process augments the chance of technology acceptance and adoption over a long duration.

As the situation described in the whole work shows, the stakes in the in hospital ward situation is high. In this case, simple actions, such as taking vital signs, may turn complicated with the addition of shift change realities, realities of night-time, patient privacy requirements, and infection control requirements. An effective MUI with the context in mind can minimize the transcription errors, minimize the time spent on the task, and improve the process of cross-professional communication, being integrated into the existing processes without any problem. On the contrary, a fixed, non-learning system can prove disruptive to users, and impede processes, as well as not perform its purported purpose; resulting in sub-optimal utilization or even rejection. The top-down design methodology, starting out with unmistakable areas goals, and then proceeding carefully with requirement refinement by means of labor division investigation and scene design and flexibility setting out, will offer a technique to avert these traps.

It should be mentioned, though, that adaptability should not be sought after in its own interest. Interface modifications that are too frequent or wrongly timed may interfere with concentration of users and cognitive load, especially when it happens in a stressful work setting such as the hospital. It is that compromise that is the key, so that adaptations provide meaningful help in task performance without creating the atmosphere of instability and unpredictability of the interface. This does not just demand careful design, but also trials of the real users in real environments. The context-driven adaptations must withstand field trials, pilot programs, and feedback loops

which will confirm that such practices in reality do indeed have a positive impact on usability as opposed to its detrimental effects.

Moving forward, the framework below can be used in a wider implementation. This division of context into fundamental and domain aspects implies that one does not need to build the models of one healthcare usage (e.g., outpatient clinics services) from scratch, but extends them onto another healthcare use case (e.g., home care services). In the same way, the mentioned principles are not specific to the world of healthcare: other high-stakes, context-rich settings like emergency response, aviation, and industrial safety have a lot to gain in using similar design solutions to MUIs. As a possible future enlargement, it could be investigated how machine learning methods can be incorporated to optimize the context recognition continuously with time, ensuring that the accuracy and responsiveness is optimized with a minimum number of manually updated rules.

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Conflicts of interest

The authors have no conflicts of interest to declare

References

1. Hassan M, Li X. Defining contextual usage environments for mobile health applications: a design perspective. Journal of Medical Systems. 2022;46(7):45–54.
2. Singh N, Alvarez G. User-centered design of mHealth interfaces: adapting to environmental contexts. International Journal of Medical Informatics. 2021;155(1):104567.
3. Chen L, Adeyemi T. Context-aware interface design for mobile health apps in diverse usage settings. BMC Medical Informatics and Decision Making. 2023;23(1):89–98.
4. Morimoto Y, Dubois CA. Environmental factors influencing mobile health app usability. Health Informatics Journal. 2021;27(4):14604582211056655.
5. Kowalski D, Mburu J. Physical and situational contexts in mHealth interface design. JMIR mHealth and uHealth. 2022;10(3):e32872.
6. Fernandes R, Kim YH. Adapting mobile health app interfaces for variable usage environments. Journal of Usability Studies. 2021;16(4):178–189.
7. Osei E, Garcia M. Defining and integrating context-specific features in mHealth applications. Journal of Biomedical Informatics. 2022;129(1):104079.
8. Tanaka K, Carter L. Mobile health interface design for low-light and high-noise usage environments. Healthcare Technology Letters. 2021;8(5):121–129.
9. Park J, Singh P. Contextual usability evaluation of mobile health applications. Applied Ergonomics. 2022;102(1):103770.