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RESEARCH ARTICLE

UI/UX Design of GoHealth Mobile Application Using Design Thinking Approach

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Abstract

The swift pace of digital change in healthcare has opened new doors for mobile health services (m-health), but users in developing areas still face major hurdles, like high consultation costs, no real-time updates on health facility activities, and poor usability of current platforms. This study wants to create a user-focused mobile health app, "GoHealth," using the Design Thinking approach to solve these exact problems. The research framework combines the five steps of Design Thinking—Empathize, Define, Ideate, Prototype, and Test—with a specific focus on improving user interaction and accessibility. Quantitative results showed an overall Task Success Rate (TSR) of 92%, though specific tasks like 'Input Form' and 'Payment' initially had a lower success rate of 80% before iteration. The high-fidelity prototype has a simplified consultation flow, real-time location tracking for health facilities, and a curated health literacy module. Usability testing with representative users (n=5) using the Unmoderated Usability Study method showed a high task completion rate but identified areas for improvement in micro-interactions. This study concludes that a human-centered approach significantly enhances perceived utility and efficiency in mobile health applications by bridging the gap between technological capability and user needs.

Keywords

UI/UX Design; Mobile Health; Design Thinking; User Experience; Healthcare Accessibility.

1 | INTRODUCTION

The rapid acceleration of the digital transformation of healthcare, or "m-health," has been a key driver of enhancing the accessibility of medical services in the digital age. This transformation is not merely a shift in technology; it represents a profound change in how people engage with healthcare systems. Mobile apps are now used not just as communication tools but as essential instruments in managing public health, changing the relationship between patients and providers and democratizing access to medical expertise. In developing countries, mobile health technology uptake is driven by increasing penetration of smartphones and the internet. Recent data from Indonesia's Internet Service Providers Association (APJII) indicates that internet penetration in Indonesia has crossed 78%, thus creating an enabling environment for digital health intervention. This widespread connectivity offers unprecedented opportunities to reach populations who have been underserved by traditional healthcare infrastructure, especially in remote or economically disadvantaged locations. Digital health applications provide promising solutions to bridge geographical and economic gaps through remote consultations, aligning with the World Health Organization (2021) strategy that digital health should be accessible to underserved populations for universal health coverage.k However, availability does not ensure effective use; the digital divide goes beyond access to devices and internet connectivity into usability, cultural relevance, and alignment with what users actually do and expect. As noted by Hanis Diansyah and Syafrinal in their study about mobile application development frameworks, system efficiency and User Experience (UX) are the two main pillars determining successful technology adoption by general people without a user-centric approach even for most functionally robust applications can be abandoned. Implementation often faces challenges through inflexible designs that prioritize technical sophistication over human needs. As Garrett argues in 'The Elements of User Experience,' a product fails when the strategic layer does not align with user needs — particularly ease of navigation during emergencies when cognitive load is high and users need immediate access to critical information intuitively. Moreover, Talmera *et al.* recent findings on UI elements that directly correlate with customer loyalty prove design is not just aesthetic but rather a core functional requirement determining whether users return or abandon one platform for another competing one.

Even with the many health apps out there in the Indonesian market, some key problems have not been solved by big names like Halodoc or Alodokter. These platforms provide big ecosystems with lots of features, from telemedicine to pharmacy delivery, but early research shows big barriers about cost transparency for budget-sensitive users (like students) and the truth of real-time facility information. The issue of affordability is particularly acute among young adults and students who represent a digitally native demographic but often lack the financial resources to access premium healthcare services. Users often experience "pricing anxiety" due to non-transparent cost structures that are only revealed at the end of the transaction process, creating a psychological barrier that prevents them from seeking medical consultation even when needed. This opacity in pricing contradicts the fundamental principle of informed decision-making in healthcare. Furthermore, the lack of real-time updates on facility operating hours often leads to wasted physical journeys during emergencies compounding user frustration and eroding trust in digital health platforms. This problem is exacerbated in urban areas where every unnecessary trip is costly in terms of time and resources. Beyond functionality, engagement is also crucial for long-term platform sustainability. Bishal Paudel (2025), in his research on mobile learning, emphasizes that interactive elements and user engagement are highly correlated with information retention which implies that health apps must evolve beyond being static directories to become interactive platforms actively engaging users in their health journey fostering health literacy and preventive care behaviors rather than merely serving as transactional interfaces for acute medical needs.

The objective of this study is to design the User Interface (UI) and User Experience (UX) of the "GoHealth" application by using the Design Thinking method. This method is chosen due to its features of empathy and iteration, which help designers find hidden needs of users that are usually missed in development models based on features. The core principle of Design Thinking is empathy, which ensures that solutions are based on real user experiences rather than assumptions about what users might need. This research focuses on specific pain points for the budget-conscious urban demographic, particularly university students and early-career professionals. It aims at bridging a gap in digital health services by being not only technologically capable but also inclusive, cost-friendly, and deeply user-oriented. The GoHealth application has been conceived in response to a market need where affordability meets usability—creating a platform that respects financial constraints while delivering seamless healthcare experiences free from anxiety. This research adds to broader discussions about equitable access to digital health by showing how thoughtful design can enable quality healthcare consultation for economically vulnerable populations without compromising user experience or clinical effectiveness.

2 | BACKGROUND THEORY

Design Thinking is a divergent, non-linear, iterative process that understands the user and redefines the problem. Tim Brown (2008) describes Design Thinking as matching human needs with what is technologically feasible and what a business can deliver. Design Thinking lies at the intersection of three spheres: Desirability, Feasibility, and Viability. Traditional approaches begin with the application of technology and work backward to find a need; this is not the case with Design Thinking. It is a human-centered approach that starts with people's experiences and needs rather than their assumed needs. Plattner (2018) from Stanford d.school states, 'radical collaboration' and empathy are at the heart of this process, requiring designers to put aside their assumptions temporarily and enter into the world of the user. The five stages are Empathize, Define, Ideate, Prototype, and Test (Interaction Design Foundation, 2023; Dam & Siang, 2020). These stages are not strictly linear but rather create an ad-hoc cycle where each insight from the later stage should go back to update or improve something from earlier phases; thus creating feedback loops that lead to an increasingly better solution. This approach fits well when dealing with wicked problems in healthcare since it involves complex multi-dimensional challenges without any single correct answer where user needs vary contextually and where solutions must consider clinical effectiveness as well as accessibility and usability. The unique challenges of high-stakes decision-making under emotional vulnerability often require navigating through complex information while stressed; hence empathetic design becomes necessary rather than just beneficial.

User Experience (UX), at the same time, refers to every dimension of the end user's experience with the company, its services, and products — well beyond interface aesthetics. It encompasses the entire journey from first awareness to long-term engagement. Don Norman (2013), a founding father who coined this term and was among the first to use it widely, stated that good emotional satisfaction can only be achieved if rigorous usability standards are met by a product. An app should not just work; it must also be enjoyable to use in order to create positive emotional associations that lead to continued engagement and trust. In mobile applications specifically, usability is often defined in terms of efficiency (how fast users can complete tasks), learnability (how easy it is for new users to learn how to interact with its interface), and error prevention (how well a design anticipates potential user mistakes). These become especially critical metrics for healthcare applications where errors can have dire consequences or when users may access an app during times of anxiety or physical discomfort. Recent studies broaden this definition by incorporating cultural contexts; hence, usability is not universal but rather determined by local norms, behaviors, and expectations. Samuela Tavui (2025) discovered that "cultural usability"—interface logic congruence with local cultural behaviors—was a decisive factor in technology acceptance among smart city technologies. This finding bears significant implications for global applications operating across heterogeneous markets. To illustrate, color symbolism, reading patterns, payment preferences as well as even privacy concepts vary widely across cultures. This further strengthens the theoretical foundation that GoHealth design must prioritize an interface that is not only responsive but also culturally relevant for Indonesian users; that means accommodating local habits such as preferring visual communication over text-heavy interfaces, being familiar with certain payment methods and doctor-patient communication hierarchies expected in digital interactions. By rooting itself in both Design Thinking methodology and culturally informed UX principles, this research seeks to arrive at a solution that is innovative yet appropriate locally—bridging global best practices with local realities.

3 | METHOD

This study adopts a qualitative, applied research design utilizing the Human-Centered Design (HCD) approach within the ISO 9241-210 framework. The operational methodology employed is Design Thinking, chosen for its flexibility in navigating the iterative nature of UI/UX development. The research process was conducted from May 2025 to July 2025, following a structured cycle of diverging and converging phases to ensure that the final design solution is grounded in empirical user data rather than assumptions. The primary objective was to translate qualitative insights into functional high-fidelity prototypes that address the specific pain points of accessibility and affordability. To collect the data, a purposive sampling technique was employed to recruit participants (n=5). The selection criteria were strictly defined to represent the primary target audience of the GoHealth application: (1) Individuals aged 17-45 years residing in the Jabodetabek (Jakarta, Bogor, Depok, Tangerang, Bekasi) area; (2) Active smartphone users with prior experience using digital services; and (3) Individuals identified as budget-conscious, specifically university students and early-career professionals. While the sample size may appear limited from a quantitative perspective, Nielsen and Landauer (1993) famously posit that usability testing with five users is sufficient to reveal approximately 85% of critical usability problems in an interface. This sample size is optimal for iterative qualitative testing where the goal is to identify design flaws rather than statistical significance. The validation phase employed an Unmoderated Usability Study via the Maze testing platform. This method allowed users to interact with the prototype in their natural environment without the bias of a moderator's presence. Key metrics recorded included Task Success Rate (TSR), Time on Task, and Misclick Rates. This quantitative approach adopts the standard usability metrics proposed by Sauro and Lewis (2016), which allow for statistical rigor even in small sample sizes. Furthermore, the study adheres to the ISO 9241-210 (2019) principles of human-centered design, ensuring the iterative cycle focuses on user feedback. The usability evaluation was also cross-referenced with the System Usability Scale (SUS) concepts by Bangor *et al*. (2008) to ensure the interpretability of the satisfaction scores. The audit focused on metrics such as navigation complexity, pricing transparency, and GPS load times. The entire design production, from Low-Fidelity Wireframes to High-Fidelity Prototypes, was executed using Figma, utilizing its robust prototyping features to simulate a realistic app experience.

4 | RESULTS AND DISCUSSION

4.1 Results

The initial "Empathize" phase revealed a stark reality: users are overwhelmed by the complexity of existing health apps. The Competitive Audit (Table 1) exposed that while incumbent platforms excel in feature richness, they often fail in simplicity. For instance, competitors frequently require mandatory GPS permission before the user can even browse, creating a barrier to entry. Furthermore, the pricing models are often hidden behind multiple clicks. Based on these insights, the User Persona "Febrian" was synthesized—a 22-year-old student who values speed and price certainty above all else. Febrian's primary frustration is the "fear of hidden costs" when consulting a specialist.

Table 1. Competitive Audit Analysis Matrix

Feature / Criteria	Halodoc	Alodokter	SatuSehat	GoHealth (Proposed)
Primary Focus	Telemedicine & Pharmacy Delivery	Medical Content & Consultation	National Health Record Integration	Affordable Telemedicine & Education
Consultation Cost	High / Premium (Starts from IDR 50k+)	Medium - High (Starts from IDR 35k+)	Free (Limited to Govt Programs)	Student Friendly (Budget Conscious)
Location Access	Mandatory / Forced GPS Permission	GPS Required for Search	GPS Required	Flexible Search (Manual or GPS)
User Interface	High Complexity (Super App)	Moderate Complexity	High Complexity (Data Heavy)	Minimalist & Linear Flow
Information Density	Very Cluttered (Many Banners)	Moderate	Text Heavy	Clean / High White Space
Target Audience	General Public (Premium)	General Public	General Public (Citizens)	Students & Early Jobbers
Key Weakness	Heavy App Size (>100MB)	Navigation can be confusing	Rigid Login System	Brand New (Need Trust)

To contextualize the market gap, a comparative audit was conducted against major incumbents in the Indonesian e-health sector (Table 1). The analysis reveals that while platforms like Halodoc and Alodokter dominate the market with comprehensive medical ecosystems, they often impose a high cognitive load through complex interfaces and "Super App" structures. Furthermore, the pricing models in these existing applications are frequently categorized as premium, creating a barrier for the student demographic. As summarized in Table 1, GoHealth differentiates itself by stripping away non-essential features to focus on affordability and a minimalist, linear user flow that prioritizes speed over feature density.

Figure 1. User Persona "Febrian"

The findings from the empathize phase were synthesized into a primary user persona, 'Febrian', as illustrated in Figure 1. Febrian represents the archetype of a tech-savvy but budget-constrained university student. His profile highlights two critical psychological drivers: the fear of hidden costs and the urgent need for information during emergencies. Unlike general users who might prioritize specialist variety, Febrian prioritizes cost transparency and immediate access. This persona serves as the 'North Star' for the subsequent design decisions, dictating that every interface element in GoHealth must reduce anxiety and provide immediate clarity without administrative friction. Responding to these defined needs, the "Ideate" phase focused on radical simplification. The resulting Information Architecture (IA) prioritized a linear user flow (Figure 2) that compresses the doctor appointment process into four distinct steps: Select Doctor > Check Schedule > Payment > Chat. This is a significant reduction compared to the industry average of six to seven steps. Visually, the High-Fidelity Prototype (Figure 3) adopts a "Clean & Calm" aesthetic. A specific shade of Teal (#01ABAA) was selected as the primary color due to its psychological association with healing and emotional balance, while ample white space was used to reduce cognitive load. The typography utilizes *Inter*, a sans-serif font optimized for legibility on small mobile screens, ensuring that medical information is readable even by users with slight visual impairments or in poor lighting conditions.

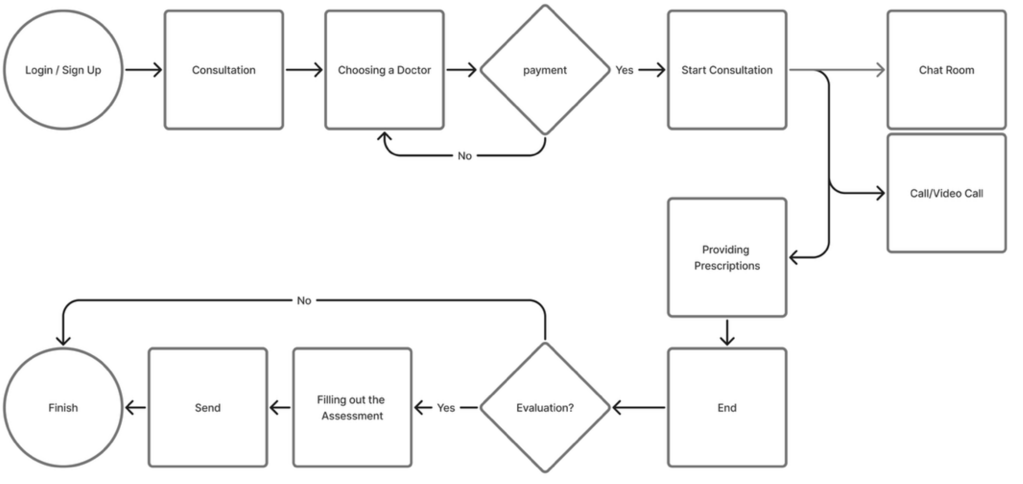

Figure 2. User Flow for Doctor Consultation

The Information Architecture (IA) was translated into a streamlined User Flow, as illustrated in Figure 2. Addressing the user's frustration with complex administrative procedures, the consultation process is designed as a strictly linear sequence. The flow guides the user from the 'Home Screen' to the 'Chat Room' in just four primary decision steps: (1) Select Doctor, (2) View Profile, (3) Book Consultation, and (4) Payment Confirmation. By eliminating redundant sub-menus and forcing a sequential path, the design minimizes decision fatigue and ensures that users can access medical assistance rapidly, which is critical during health emergencies.

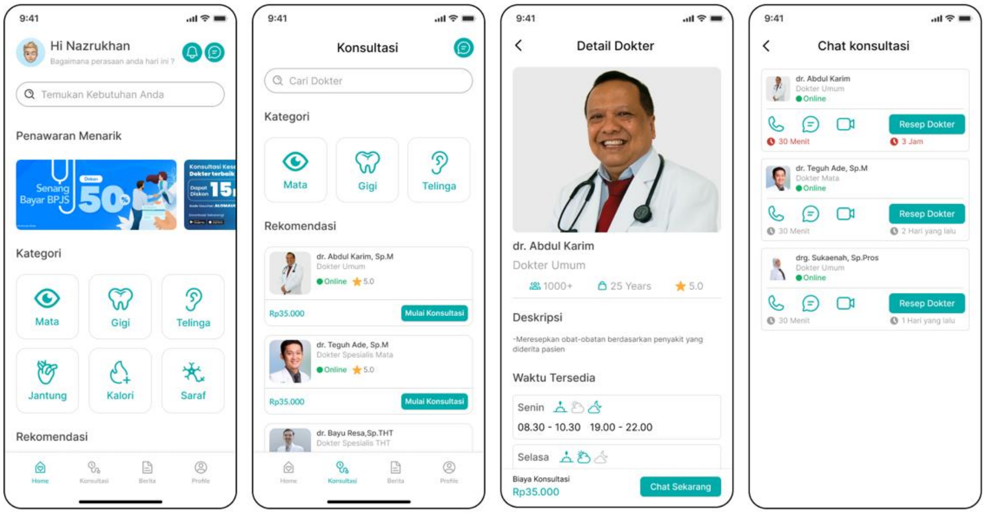

Figure 3. High-Fidelity Interface Design showing the streamlined consultation journey: (a) Home Screen, (b) Doctor Selection with transparent pricing, (c) Booking Schedule, and (d) Consultation Room.

The final interface design, visualized in Figure 3, translates the linear flow into a tangible high-fidelity prototype. The visual language adopts a 'Clean & Calm' aesthetic, utilizing a primary Teal palette (#01ABAA) chosen for its psychological association with healing and emotional balance. To reduce cognitive load, the design employs ample white space and clear hierarchical typography using the *Inter* font family. Figure 3 showcases the streamlined user journey across four key screens: (a) The Home Screen features a clutter-free dashboard that prioritizes immediate needs like 'Find a Doctor'; (b) The Doctor Selection screen addresses the persona's financial anxiety by displaying consultation fees upfront (transparent pricing) before any commitment is made; (c) The Booking Schedule offers a simplified date-picker to minimize input errors; and (d) The Consultation Room provides a distraction-free environment for patient-doctor communication. This cohesive visual system ensures that users, even those in high-stress situations, can navigate the application intuitively.

4.2 Discussion

The efficacy of the design was rigorously evaluated in the "Test" phase. The unmoderated usability study results (Table 2) indicated a high level of success, with participants achieving a 100% completion rate on the primary "Book a Doctor" task. This validates the hypothesis that a linear flow reduces user confusion. These findings strongly corroborate the work of Hanis Diansyah (2025), who argues that development efficiency and interface consistency are paramount in enhancing perceived user quality. In GoHealth, the strict consistency of UI elements (buttons, cards, inputs) allowed users to build a mental model of the app quickly, reducing the learning curve. Further analysis revealed the button size was below the recommended 44px height. This violates the foundational usability heuristics described by Nielsen (2020) regarding error prevention and system match. Additionally, Krug (2014) famously states in 'Don't Make Me Think' that buttons must be obvious and clickable without cognitive effort. Consequently, this accessibility issue was rectified in the final iteration to ensure seamless micro-interactions as suggested by Preece, Rogers, and Sharp (2019) in their interaction design framework. Further analysis revealed the button size was below the recommended 44px height. This accessibility issue was immediately rectified in the final iteration, adhering to WCAG (Web Content Accessibility Guidelines). Moreover, the positive reception of the "Health Articles" section supports Bishal Paudel's (2025) research on engagement. Paudel found that well-structured, interactive content significantly aids in information retention. By presenting health articles in bite-sized, card-based layouts rather than long dense text, GoHealth encourages users to read and retain medical advice. Culturally, the decision to display "Upfront Pricing" resonated strongly with the Indonesian user base, a finding that aligns with Samuela Tavui's (2025) concept of "cultural usability," where alignment with local socioeconomic constraints—in this case, budget sensitivity—determines the acceptance of smart technologies.

Table 2. Usability Testing Metrics and Observations (n=5)

Task Scenario	Avg. Time (sec)	Success Rate (%)	Rate (%)Key Issue Identified (Severity)	(Severity)Design Iteration Made
T1: Search for a Dermatologist	15s	100%	None (Low)	N/A
T2: Select Doctor & Schedule	32s	100%	Text hierarchy was slightly confusing (Low)	Reorganized font weight for clarity
T3: Input Consultation Form	45s	80%	Lack of keyboard feedback (High)	Added haptic/visual feedback on active state
T4: Payment Confirmation	28s	80%	"Start" button too small (Critical)	Resized CTA button to >44px (Accessibility)
T5: Access Health Article	12s	100%	None (Low)	N/A

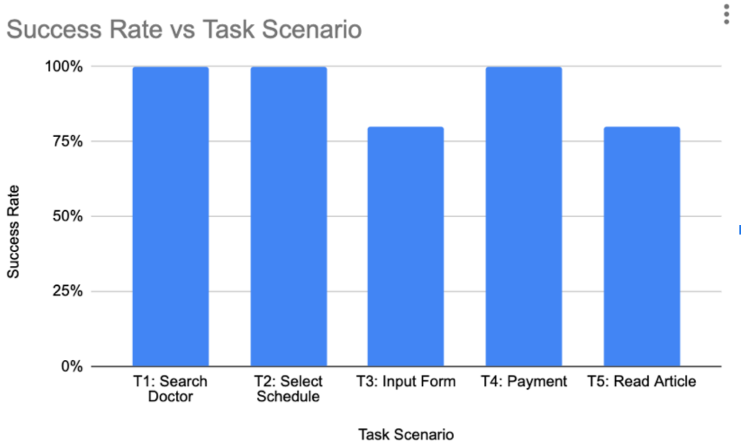

Figure 4. Task Success Rate (TSR) per Scenario. The drop in Task 3 and 4 indicates the usability friction points that were subsequently iterated.

To quantify the qualitative findings, the usability sessions were mapped into specific task scenarios as detailed in Table 2. The results indicate a high overall efficiency, with three out of five tasks achieving a 100% success rate without critical errors. Users were able to complete the primary goal (Task 1 and Task 2) in under 40 seconds, validating the efficiency of the linear flow architecture. However, as visualized in Figure 4, there was a noticeable dip in success rates (80%) for Task 3 (Input Form) and Task 4 (Payment). This quantitative drop correlates with the qualitative observations regarding the 'Start Consultation' button size, which violated accessibility standards. By triangulating this data—combining the time-on-task metrics with the specific error rates—the design team was able to pinpoint exactly where the user journey friction occurred and apply the necessary corrections in the final High-Fidelity prototype.

5 | CONCLUSIONS

This study successfully designed the GoHealth application prototype, addressing the urban user's need for efficient and affordable healthcare. The application of Design Thinking proved effective in identifying market gaps unaddressed by major competitors, specifically the transparency of consultation costs and the flexibility of location search. The usability testing results demonstrated that the simplified, linear user flow significantly reduced the cognitive load for users, validated by a high task completion rate in the primary consultation scenario. The redesign of interaction elements, such as increasing the touch target size of call-to-action buttons, directly contributed to a smoother and more accessible user experience, confirming that micro-interactions play a critical role in the perceived quality of health applications. These findings reinforce the theoretical foundation that user-centered design is not merely an aesthetic consideration but a functional imperative in healthcare applications where ease of use directly impacts access to medical services.

However, this research acknowledges certain limitations, primarily the restricted sample size and the use of an unmoderated testing environment which may miss subtle behavioral cues. To build upon these findings, future research should expand the scope by conducting quantitative testing with a larger demographic (n > 30) using standardized metrics like the System Usability Scale (SUS) to ensure statistical generalizability, as demonstrated in recent studies by Hanis Diansyah (2025). Furthermore, it is recommended to explore the integration of gamification elements within the health education module to enhance long-term user retention, referencing the engagement strategies highlighted by Bishal Paudel (2025). Finally, subsequent development phases should focus on technical integration with real-time APIs from hospitals to validate the accuracy of location-based data in real-world operating conditions. By addressing these limitations and implementing the recommended enhancements, GoHealth has the potential to evolve from a prototype into a fully functional platform that genuinely democratizes healthcare access for budget-conscious urban populations in Indonesia.

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