ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may352

Digital Medical Aid Network: Emergency Assistance and Basic Healthcare Advice with Symptom Analysis

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Publication Date: 2025/05/20

Abstract: Think about it: you're not feeling well and need to see a doctor. Instead of heading to the office, you can chat with a doctor right from your computer or phone. This is what we call a Digital Medical Aid Network. It's like having a dedicated team of doctors ready to help you from afar, all through your devices. They can even send medication your way or help you feel better without you needing to step outside! It's like having a doctor in your pocket! This network makes it easy to: have remote chats with doctors and specialists, access your electronic health records, get AI-driven diagnoses and treatments, and keep an eye on your essential signs with IoT devices. Plus, it helps reduce the pressure on emergency services by sorting out the less urgent cases and making sure the serious ones get the attention they need. This way, you can find your way through healthcare options easily, and we also help the system run smoother by cutting down on unnecessary ER visits. In short, the Digital Medical Aid Network aims to provide a complete solution that boosts personal health and helps the healthcare system work better overall.

Keywords: *Healthcare App, Emergency Button, First Aid, Special Emergency Contacts, User Authentication, Android Studio, Java Programming, Firebase.*

How to Cite: Sharda Tanpure; Ashikaa Verma; Nahush Atre; Rutuja Auti; Tejal Awaghade; Rajlaxmi Awasthi; Ayush Sawant (2025). Digital Medical Aid Network: Emergency Assistance and Basic Healthcare Advice with Symptom Analysis. *International Journal of Innovative Science and Research Technology*, 10(5), 615-618. https://doi.org/10.38124/ijisrt/25may352

I. INTRODUCTION

Virtual Consultations: With secure video and messaging options, you can chat with healthcare professionals from the comfort of your home. This is super convenient, especially if getting to a clinic isn't an option for you. You can set up these consultations to talk about specific health worries based on your symptoms or any assessments you've had. Health Education: The platform has tons of educational resources at your fingertips—articles, videos, and handy health tips—to help you make knowledgeable choices about your health and get a better grip on medical conditions, prevention strategies, and treatment options. Emergency Alert System: There's an emergency alert feature that lets your emergency contacts or local health authorities know if your symptoms get serious. This way, help can reach you quickly if you really need it. Reduced Burden on Emergency Services: This platform provides tools to effectively manage non-critical cases and offers early intervention options, which means it helps take some pressure off emergency services. This allows medical staff to focus on what really needs immediate attention. Proactive Health Management: The platform encourages you to take the reins on your health by giving you tools for regular health tracking, setting reminders for preventive care, and accessing early screening options. This way, you can stay on top of your health in a proactive manner.

II. LITERATURE REVIEW

Ahmed Imteaj et al. have reported and developed an Android-based app to improve healthcare access in Bangladesh. It features online cabin booking, hospital and doctor information, emergency services, medication

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reminders, and a BMI calculator. Data from hospitals and user feedback through surveys were used for effectiveness.

Dr. Anna Sofia et al. analyzed three Swedish healthcare apps, focusing on their affordances. Sofia Lundgren examined how the apps shape healthcare and patient identity. Lindberg highlighted societal implications, while Eric Carlsson explored how the apps appeal to young, urban consumers through marketable healthcare stories.

Abu Saleh et al. Conducted literature review and analysis to categorize healthcare apps. Illhoi Yoo: Led methodology and data collection, selecting relevant MEDLINE articles. Lincoln Sheets: Summarized app functionalities and discussed their implications for healthcare professionals and patients.

III. METHODOLOGY/EXPERIMENTAL

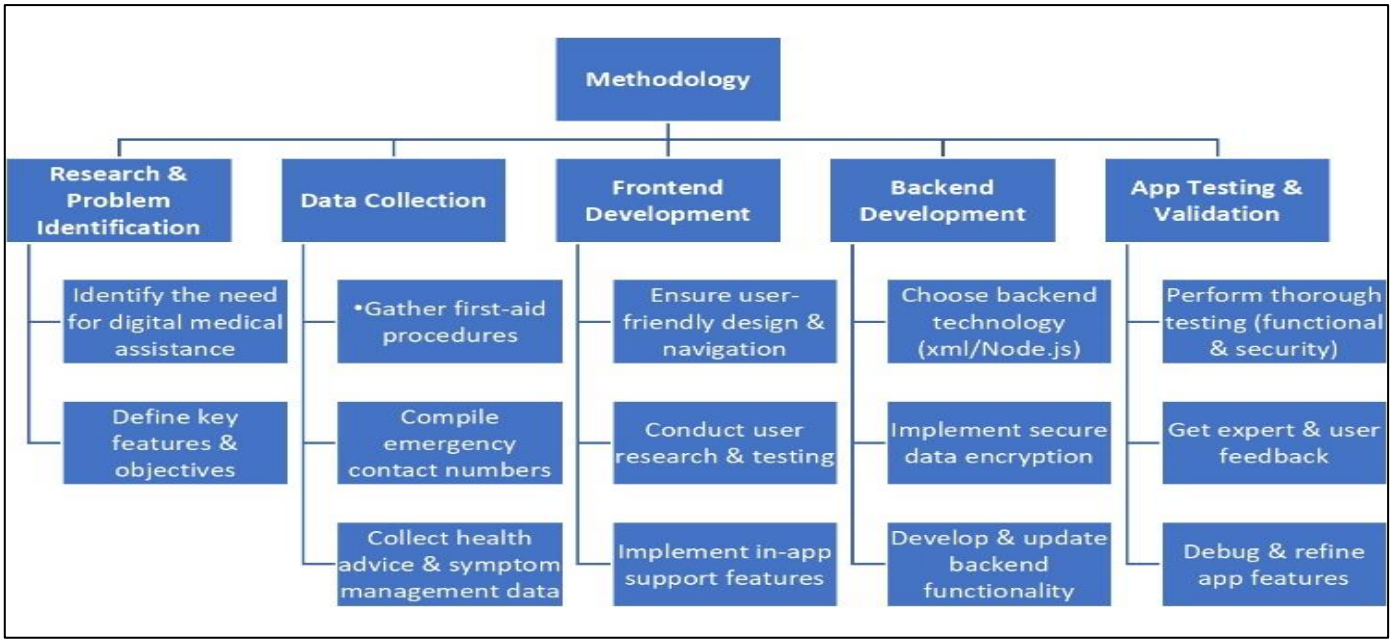

Fig 1 Methodology

Creating a medical app for emergency help and health advice calls for a clear plan to make sure it works well, is dependable, and follows healthcare rules. This guide lays out the organized steps needed to build this kind of app using Android Studio and Java.

App is divided in two phases:1. Designing and developing the application: By distributing work equally, frontend and backend were developed using Java language and later by integrating it an app was developed. 2. Evaluating its performance through user testing and feedback: By testing and from user's feedback we get that app worked efficiently.

The next step is System Design, where it's important to pick the right architecture, like MVVM (Model View-View Model), to keep the code easy to maintain. When it comes to database design, we had to choose storage solutions like Firebase or SQLite for handling user data, medical records, and emergency contacts. Adding third-party APIs for emergency services, and healthcare databases makes the app even more useful. Don't forget about UI/UX design, which plays a key role; creating wireframes and mockups helps make sure the app is accessible and user-friendly.

Collected required data such as First-aid procedures, emergency numbers, health advice, etc. Searched for instructions on how to perform basic first-aid such as CPR, wound cleaning, bandaging, handling fractures and stopping bleeding and also searched for list of special emergency numbers for different regions, most preferred emergency number is for ambulance. Also searched for tips on managing symptoms and when to seek professional medical help.

Some medical apps feature comprehensive medical libraries, which can be overwhelming when immediate action is needed. This app prioritizes clear, step-by-step first aid instructions, allowing users to quickly find and apply essential medical guidance. Enhancements such as visual aids or instructional videos could further improve its effectiveness.

While the app provides general health guidance, it does not replace professional medical diagnosis, which may limit its effectiveness in complex cases. Some individuals may not be familiar with emergency apps, which could reduce their willingness or ability to use it in critical situations.

Software used for the project is Android Studio with Java and firebase. Development model used for this app is agile methodology with iterative testing. While working on the projects we faced many problems like errors in code, app crash, etc.

To fix bugs, improve performance and add new features continuously updated the backend part. Implemented clear and easy-to-use navigation elements such as menus, buttons and tabs for frontend. Conducted user research and testing to understand user's needs and preferences.

Also, user's sensitive data is encrypted in transit and at rest to protect user information from unauthorized access, the

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app is developed by using consistent design language throughout for a cohesive user experience.

The app will serve as a comprehensive platform where users can quickly access emergency services, get accurate medical information and receive personalized health advice.

IV. RESULTS AND DISCUSSIONS

The emergency button is designed for emergency assistance, It calls ambulance and pre-selected relatives the app is active. The initial test indicates that the call is calling withing a second when we tab on the emergency button depending on network condition.

The symptom checker is designed to help users assess their health conditions based on their reported symptoms. It provides suggestions on whether the user should seek medical attention immediately, monitor symptoms at home, or apply first aid. The system uses a basic decision-tree model or predefined symptom-response mapping to generate recommendations. Initial testing shows that the symptom checker is effective for common illnesses and minor medical conditions. One of the main advantages is its user-friendly interface, making it accessible even for non-tech-savvy individuals. The straightforward question-answer format ensures ease of use.

The app provides a comprehensive first aid guide for common medical emergencies such as CPR, wound cleaning, bandaging, handling fractures, and bleeding control. The information is placed in a Library in a structured manner e.g. (step-by-step) making it easy for users in emergency assistance well as if required. The information is simply written for users for making it easy to understand and follow the instructions for non-medical trainer.

The app is designed to operate smoothly on most mobile devices, for quick response times for emergency alerts and symptom assessments. Tests indicate that emergency alerts are sent within a second, depending on network conditions. The symptom checker provides results in real-time, enhancing usability during urgent situation. The app runs without significant crashes or slowdowns. The first aid guide is accessible offline, but other features, like the symptom checker and emergency alerts, require an internet connection. Early feedback suggests that the interface is intuitive and easy to navigate, making it accessible for users of all ages, including elderly individuals.

V. FUTURE SCOPE

There's a lot of promise for a medical app aimed at emergency help and healthcare advice, especially with all the swift changes in the healthcare environment. More and more people are grabbing their smartphones and looking online, making apps like this a real lifesaver for folks, whether they're in busy cities or quiet rural areas. The digital health market is on the rise globally, with emerging trends like telemedicine, AI in diagnostics, and emergency response systems emphasizing a strong demand for innovative healthcare solutions. Since the pandemic, people have become more health-conscious, making remote medical help feel more critical than ever.

A top-notch medical app could pack in a ton of advanced features to keep it user-friendly and trustworthy. For starters, AI-driven symptom checkers can kick off the process by offering initial healthcare advice, while real-time emergency features help users find the nearest hospital, request an ambulance, or connect with doctors via video calls. The app could also provide telemedicine services for consultations with doctors from the comfort of home, plus e-prescriptions to guide users on medications. Integrating wearables, like smartwatches, could also enhance emergency responses by continuously monitoring essential signs such as heart rate, blood pressure, and oxygen levels. Other handy features might include automated first-aid tips, support for multiple languages, and secure systems for sharing medical records with healthcare providers.

From a business perspective, there's solid potential to make money with this app. A freemium model could offer basic health info for free, while charging a subscription for advanced AI-based diagnostics and expert consultations. You could also bring in revenue through consultation fees, partnerships with health insurance companies, and commissions on medical product sales. Collaborating with hospitals and pharmacies could open up even more lucrative business opportunities through referral programs.

As technology keeps moving forward, medical apps are likely to become even smarter. AI and machine learning could enhance predictive healthcare and emergency assessments, while 5G tech will speed up telemedicine services. In the future, we could see cool ideas like augmented reality for first-aid training or integration with home medical devices totally changing the game for emergency healthcare delivery.

But even with all these exciting possibilities, there are challenges to address for the app to really succeed. It's key to comply with healthcare regulations from organizations like the FDA and HIPAA to maintain credibility and build user trust. Protecting patient data from cyber threats is essential, as is ensuring the medical info provided through the app is accurate. This means having certified professionals review the healthcare advice offered. Building partnerships with respected healthcare institutions will also play a critical role in earning user trust, which is essential for growth.

All in all, a medical app focused on emergency assistance and health advice has huge potential to boost access to healthcare and improve emergency responses. By using AI, telemedicine, IoT, and secure data handling technologies, this app can provide reliable, immediate medical support to countless users. With the right mix of innovation, compliance, and smart partnerships, it could become a important player in the healthcare arena.

VI. CONCLUSION

This study aims to bridge the gap between patients and healthcare providers by using advanced technology to encourage proactive health management and ensure quick emergency responses. It will make healthcare more accessible and efficient, helping individuals manage their health with confidence and ease. By giving immediate access to essential services and reliable medical information, it will support a more patient-centered healthcare system, finally improving

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health outcomes and enhancing the system's responsiveness. What's more, the project is dedicated to continuous improvement and integrating user feedback, guaranteeing that the app evolves to meet the changing needs of its users. This adaptive approach will not only improve the app's functionality but also create a community of knowledgeable and engaged users who can better manage their health. By accepting innovation and collaboration, it aims to set a new standard for digital health solutions, making a meaningful contribution to the future of healthcare.

ACKNOWLEDGMENT

We want to give a big thank you to our mentors, professors, and teammates for their amazing guidance and support throughout this project. Their expertise and encouragement were essential in helping us understand the importance of emergency services. We're also really grateful to our institution and lab staff for providing the resources and facilities that guided us along the way. A special shoutout to our peers and colleagues for their insightful discussions and contributions that helped us refine our approach. And of course, we want to acknowledge the medical experts who provided us with accurate information, and the app developers who made the app-building process so much simpler. This project wouldn’t have been possible without everyone’s collective effort.

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