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A PROJECT REPORT

ON

"Centralised De-addiction and Counselling Data Management Web Application"

Submitted in partial fulfilment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

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in partial fulfillment for the award of Bachelor of Engineering in Information Science and Engineering of the Visvesvaraya Technological University, Belgaum during the year 2024-25. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library.The project report has been approved as it is satisfied the academic requirements in respect of project work prescribed for the said Degree.

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ABSTRACT

The Centralised De-addiction and Counselling Data Management Web Application is a transformative effort aimed at streamlining and centralizing data management for addiction treatment centers and counseling services. With the growing challenges posed by addiction and mental health issues, this web application provides a scalable, efficient, and secure digital platform to address the inefficiencies of traditional systems. By integrating data from multiple sources, it ensures seamless access, enhances collaboration among stakeholders, and facilitates better decision-making to improve patient care and service delivery.

Built using modern technologies like React for the front-end, Node.js and Express for the back-end, and MongoDB for database management, the platform combines robust architecture with an intuitive interface. It supports real-time updates of patient records, scheduling of counseling sessions, and detailed reporting on treatment outcomes. The centralized approach reduces redundancy, optimizes resource allocation, and significantly enhances operational efficiency. Additionally, the system prioritizes data security and privacy, adhering to strict compliance standards to protect sensitive information.

Beyond its core functionalities, the application offers analytics tools to monitor trends and generate insights, empowering administrators to make informed decisions. By addressing the complexities of addiction treatment with a technology-driven approach, the project holds immense potential to improve the accessibility, transparency, and effectiveness of services. It stands as a vital step forward in promoting recovery, resilience, and well-being in an increasingly connected world.

Keywords: Centralized Data Management, Addiction Treatment, Counseling Services, Full-Stack Web Application, React, Node.js, Express, MongoDB, Data Privacy, Real-Time Data, Digital Transformation, Analytics.

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1 PREAMBLE

1.1 Introduction

The Centralised De-Addiction and Counselling Data Management Web Application is an innovative initiative designed to digitize and centralize critical information related to addiction treatment centers and counseling services. In the face of increasing challenges surrounding addiction and mental health, the portal provides a robust solution to streamline data management, improve accessibility, and enhance collaboration among stakeholders. The platform caters to multiple users, including individuals seeking assistance, de-addiction centers managing their operations, and government authorities monitoring patient data and program effectiveness.

A key feature of the application is its ability to allow users or clients to search for specific de-addiction centers based on treatments offered, such as those targeting alcohol or drug addiction. The user-friendly interface ensures seamless navigation, enabling individuals to locate centers tailored to their specific needs. On the other hand, centers can register themselves on the platform, update their profiles, and manage patient data efficiently. This facilitates better communication and coordination with other centers and stakeholders. Additionally, government administrators can access anonymized patient data to analyze trends, allocate resources effectively, and monitor the overall impact of addiction treatment programs.

The technological foundation of the project is built on modern full-stack web development tools. React is used for the front-end, offering a dynamic and responsive user interface, while Tailwind CSS enhances the styling and layout. Node.js and Express power the back-end, ensuring smooth handling of server-side logic and APIs. MongoDB serves as the database, providing scalable and flexible data storage. Deployment leverages Vercel for the front-end and Render for the back-end, ensuring that the platform remains reliable, scalable, and capable of handling high traffic demands.

An innovative addition to the platform is the integration of a chatbot powered by Gemini. This feature provides instant assistance to users, answering queries and guiding them through the platform. The chatbot enhances user engagement and accessibility, especially for individuals unfamiliar with navigating digital platforms.

This project represents a significant step forward in utilizing technology to address societal issues. By centralizing information, reducing redundancy, and promoting collaboration, the application improves the efficiency and effectiveness of addiction treatment services. It not only supports individuals in their recovery journey but also empowers treatment centers and policymakers with the tools and data needed to make informed decisions.

Key Features

- **Profile Setup and Display**
  The profile setup feature enables center administrators to create detailed profiles through an extensive form with built-in validation checks. This form captures essential information such as the center's name, location, contact details, available treatments, and operating hours. Validation mechanisms ensure that the data entered is accurate and complete. Once the setup is finalized, the profile is displayed dynamically, allowing administrators to review and update the details as needed. This feature provides a structured and professional representation of the center on the platform, enhancing visibility and credibility.

- **Search Functionality**
  The search feature is designed to help users locate de-addiction centers based on various criteria such as city, state, or name. This capability simplifies the process of finding centers that meet specific needs, whether related to location or services offered. With a robust search algorithm, the platform ensures accurate and relevant results, empowering users to make informed choices quickly. The feature enhances accessibility and broadens the reach of de-addiction centers listed on the portal.

- **Landing Page**
  The landing page serves as the entry point to the web application, offering a concise yet comprehensive overview of its purpose and features. Designed with a user-friendly interface and engaging visuals, it introduces visitors to the platform's core functionalities, such as searching for de-addiction centers, managing data, and accessing counseling resources. The landing page aims to ensure that users can quickly understand the platform's value and navigate effortlessly. With intuitive navigation and links to key sections, it provides an accessible starting point for users, whether they are patients, center administrators, or government representatives.

- **Data Management**
  The data management module facilitates the efficient handling of event and patient data, enabling Create, Read, Update, and Delete (CRUD) operations through structured forms and tables. Center administrators can manage details of upcoming events such as workshops or counseling sessions and record comprehensive patient information, including personal details, treatment history, and progress notes. This feature ensures that critical data is organized and easily retrievable, promoting seamless operational management within centers.

- **Authentication System**
  The authentication system is a critical component that ensures secure access to the platform. It manages user credentials during the sign-up and login processes, serving as the origin point for creating user profiles and initializing database records. Passwords are hashed using robust encryption techniques to enhance security, safeguarding sensitive user information from unauthorized access. The system supports role-based access, distinguishing between administrators, center personnel, and unauthenticated users, and is essential for protecting the integrity of the platform's data.

- **Role Based Data Access**
  The role-based data access feature ensures that the platform adheres to strict data privacy and security standards. Administrators can view sensitive data, such as patient records and event details, while unauthenticated users are restricted to general information like center profiles and search results. This layered access control ensures that sensitive information remains confidential while maintaining transparency and usability for public users. By tailoring access levels based on user roles, the platform balances security with functionality, aligning with the needs of all stakeholders.

- **Chatbot Integration**
  A key highlight of the platform is its AI-powered chatbot, which leverages generative AI technology to provide real-time support to users. This chatbot assists visitors by answering queries about the platform, providing information on addiction-related issues, or directing them to appropriate resources. It acts as a virtual assistant, improving user engagement and ensuring that help is readily available, even outside of typical working hours. This feature enhances the platform's accessibility and usability, making it a valuable tool for users seeking guidance or support.

- **Scalable Frontend Deployment**
  The frontend of the application, hosted on Vercel, ensures swift load times, responsiveness, and adaptability across various devices. With its focus on scalability, the deployment allows for easy updates and maintenance, ensuring the platform remains future-proof as the user base and data volume grow. This streamlined deployment approach enhances the accessibility and reliability of the web application.

- **Secure Backend Deployment**
  The platform ensures reliable performance through its robust backend deployment on Render, a highly scalable and secure cloud service. This ensures that data operations, including API calls and database interactions, remain efficient and uninterrupted, even during high traffic. By leveraging modern deployment solutions, the application guarantees stability, uptime, and seamless user experience.

- **Analytics and Reporting**
  The platform includes analytics and reporting tools to help administrators monitor key performance metrics and trends. These tools provide actionable insights by analyzing data related to patient progress, event participation, and resource utilization. Visual dashboards and reports enable center administrators and government authorities to make informed decisions, optimize resource allocation, and improve the overall effectiveness of addiction treatment programs.

- **User Feedback Mechanism**
  A dedicated feedback mechanism allows users to share their experiences, report issues, or suggest improvements directly through the platform. This feature ensures continuous improvement by gathering valuable insights from real-world usage, enabling the development team to address user concerns and implement updates to enhance functionality and user satisfaction.

1.2 Existing System

Currently, existing systems in addiction treatment and counseling often focus on specific aspects such as patient management or data collection but lack a centralized and unified approach. Many de-addiction centers rely on localized patient management systems to record treatment histories and progress notes, which are effective internally but do not support data sharing or integration with other centers or stakeholders. Communication between centers, counselors, and administrators is often handled through generic tools like email, which lack structured workflows for healthcare coordination.

Government and non-governmental initiatives provide platforms for monitoring addiction trends and resource allocation, but these are primarily statistical and do not support real-time patient data management or operational needs. While some systems allow users to search for treatment centers, they are limited in scope, often lacking advanced features such as chatbot assistance or secure data handling. These limitations underscore the need for a comprehensive, centralized platform that integrates data management, user accessibility, and robust security into a single, scalable solution.

1.3 Drawbacks

Existing systems for managing addiction treatment and counseling services face significant limitations that reduce their efficiency and impact. Fragmented data management prevents effective information sharing across centers, while generic communication tools lead to delays and miscommunication. The lack of real-time data synchronization results in outdated and inconsistent information, complicating decision-making. Additionally, insufficient security measures leave sensitive patient data vulnerable to breaches, and limited functionalities fail to meet the needs of users. These challenges highlight the urgent need for a centralized, secure, and user-friendly solution to bridge these gaps effectively.

Drawbacks of Existing De-Addiction Web Applications

- **Fragmented Data Management**:
  Existing systems primarily operate in isolation, with data often stored in localized databases or manual records. This fragmentation creates inefficiencies, making it difficult to aggregate or share information across multiple de-addiction centers, which hampers coordinated efforts in patient care and resource allocation.

- **Limited Communication Tools**:
  Most systems rely on generic communication platforms like email or messaging apps, which are not tailored to the structured workflows required in addiction treatment and counseling. This lack of purpose-built tools often

results in delays, miscommunication, and difficulties in tracking conversations or updates among stakeholders.

- **Lack of Real-Time Updates**:
  Many platforms do not offer real-time data synchronization, which is crucial for maintaining accurate and up-to-date patient records, treatment schedules, and center profiles. As a result, users often encounter inconsistencies in the information available, leading to inefficiencies and potential errors in decision-making.

- **Insufficient Security Measures**:
  Existing systems often fail to implement robust security protocols, such as advanced encryption, multi-factor authentication, or role-based access controls. This exposes sensitive data, including patient records and treatment details, to significant risks of breaches and unauthorized access, undermining trust in these platforms.

- **Limited User Features**:
  Many current systems provide only basic functionalities, such as minimal search options or rudimentary data entry tools. They often lack advanced features like intelligent search, chatbot assistance, or analytics, which are essential for enhancing user experience, accessibility, and the overall effectiveness of addiction treatment services.

1.4 Proposed System

The proposed system for the "Centralised De-Addiction and Counselling Data Management Web Application" introduces a comprehensive suite of features designed to address the multifaceted needs of addiction treatment and counseling services. At its core, the system ensures a seamless user experience through a well-designed landing page that serves as the entry point, presenting visitors with an intuitive overview of the platform's capabilities. The homepage provides clear navigation to key sections, catering to diverse user roles, including individuals seeking treatment, center administrators, and government authorities. Its design emphasizes ease of use and accessibility, ensuring that users can effortlessly interact with the platform.

A robust authentication mechanism is central to the system, providing secure access for all users. The authentication process initializes database records and manages user credentials, ensuring sensitive information is protected through advanced password hashing techniques. This system supports differentiated access levels, ensuring that only authorized users, such as administrators and center personnel, can access critical data like patient records. This role-based access control ensures the confidentiality and integrity of data while maintaining ease of use for public users seeking general information.

The platform also incorporates a detailed profile management system that enables addiction treatment centers to create and maintain comprehensive profiles. This feature employs advanced form validation to ensure the accuracy and completeness of the data entered, such as location, services offered, and operational hours. Once completed, profiles are displayed dynamically, allowing real-time updates and ensuring a professional online presence for centers. Complementing this is a robust data management system that empowers centers to handle event schedules and patient records efficiently. This module supports full CRUD operations, ensuring administrators can seamlessly create, update, retrieve, and delete data using well-organized forms and tables.

Additionally, the system integrates a powerful search functionality that allows users to locate centers based on criteria like city, state, or name. This feature ensures that users can quickly find relevant centers that cater to their specific needs. The platform further enhances user engagement with an AI-driven chatbot, offering real-time assistance for queries and providing guidance on addiction-related concerns. This intelligent feature ensures round-the-clock support, improving user satisfaction and accessibility. Complementing these functionalities, advanced reporting and analytics tools provide actionable insights to administrators, helping them track patient progress, analyze event success, and make data-driven decisions. With secure deployment on Render for the backend and Vercel for the frontend, the platform ensures high availability, scalability, and optimal performance, cementing its place as a cutting-edge solution in the field of addiction treatment and counseling.

The Enhancements include

- **Dynamic Landing Page**:
  The system welcomes users with an intuitive and visually appealing landing page. This entry point introduces the platform's functionalities, such as locating de-addiction centers, accessing data management tools, and understanding the resources available for addiction counseling and treatment. The design emphasizes simplicity and clarity, ensuring easy navigation for all users.

- **Robust User Authentication**:
  Security is prioritized through a reliable authentication mechanism. The platform supports user registration and login, with password hashing for enhanced data protection. This system serves as the foundation for secure data entry and profile creation, with role-based access ensuring that sensitive information remains accessible only to authorized users.

- **Comprehensive Profile Management**:
  The profile management module allows centers to set up and maintain detailed profiles, ensuring their information is accurate and professional. An

extensive form with validation collects key details, such as the center's name, location, and available services. Once created, profiles are dynamically displayed, offering users an up-to-date overview of each center's offerings.

- **Data Management Tools**:
  The platform offers efficient tools for managing event and patient data, including Create, Read, Update, and Delete (CRUD) operations. This ensures that centers can seamlessly track event details, such as workshops or awareness programs, and maintain comprehensive patient records, including treatment progress and discharge summaries.

- **Enhanced Search Functionality**:
  Users can effortlessly find de-addiction centers through a powerful search tool. The system supports searches based on various criteria, including location, name, or services offered. This feature ensures that individuals can quickly identify and connect with the centers most suited to their needs.

- **AI-Powered Chatbot**:
  Leveraging generative AI, the chatbot acts as a virtual assistant, providing instant support to users. It answers queries about the platform, addresses addiction-related concerns, and guides users to relevant resources, ensuring a personalized experience.

- **Feedback Mechanism**:
  The system includes a feedback portal for users to share their experiences or suggest improvements. This ensures continuous enhancement of the platform based on real-world feedback.

By integrating these innovative features, the proposed system addresses the limitations of existing solutions, offering a centralized, secure, and scalable platform to revolutionize addiction treatment and counseling services. It balances functionality with accessibility, paving the way for improved collaboration, operational efficiency, and user satisfaction.

1.5 Plan of Implementation

To effectively implement our project, we devised a strategic plan that encompassed several key stages. Initially, we conducted a small survey among our friends and classmates to gather valuable insights into user preferences and needs. This data served as the foundation for our project, guiding our decisions throughout the development process. Following this, we prioritized the design of the front-end of the application, aiming to create an intuitive and user-friendly interface.Once the front-end design was established, we shifted our focus to developing the back-end functionalities, ensuring the seamless integration of features and optimal performance of the application. Our approach also emphasized the continuous enhancement of the application, with additional features being developed to further improve user-friendliness. For the implementation of our project, we followed a systematic plan to ensure efficiency and effectiveness.

- **Flow Design**:
  The development process begins with designing the user flow for all roles -clients, center administrators, and government authorities. Detailed user journey mapping is conducted to define how each user type interacts with the platform. Clients can search for de-addiction centers, view profiles, and interact with the chatbot. Center administrators manage their profiles, handle patient data, and schedule events, while government authorities access anonymized patient and event data for analysis. The flow ensures that all interactions are seamless and logically organized, minimizing confusion and enhancing usability.

- **UI Design**:
  After the flow design, the user interface layout is created for each key page of the application. Prototypes are developed using design tools such as Figma or Adobe XD to visualize elements like the landing page, profile setup forms, data management interfaces, search functionality, and admin dashboards. The design focuses on providing a clean, visually appealing, and responsive interface optimized for different devices. Special attention is given to accessibility, ensuring that the platform caters to diverse user demographics, including those with limited technical proficiency.

- **Collaborative Work Setup**:
  To facilitate teamwork and efficient code management, separate GitHub repositories are created for the frontend and backend. This segregation allows simultaneous development by different team members, avoiding conflicts and promoting modular coding practices. A structured workflow is established with guidelines for commit messages, pull requests, and code reviews to maintain consistency and quality. Regular updates and branch protection mechanisms ensure that all contributions align with the project's objectives.

- **Frontend Development**:
  The frontend is developed using React, a robust library for building dynamic user interfaces. The modular architecture of React allows the creation of reusable components, such as forms, tables, and chatbot interfaces. Tailwind CSS is employed to streamline the styling process, enabling the development of visually cohesive and responsive web pages. Features like client-side validation for forms, dynamic rendering of search results, and smooth transitions enhance the user experience.

- **Backend Development**:
  The backend, developed using Node.js and Express, handles the server-side logic and API creation for the application. Secure routes are implemented to manage user authentication, CRUD operations for event and patient data, and role-based data access. Middleware functions ensure efficient processing of requests, while database interactions with MongoDB are optimized for performance. The backend architecture is designed to handle scalability, ensuring smooth operations even with an increasing number of users.

- **API Testing**:
  Once the backend APIs are developed, rigorous testing is conducted using Postman. Each API endpoint is tested for functionality, reliability, and security under various scenarios, including edge cases. Authentication routes, data retrieval endpoints, and CRUD operations are verified to ensure proper response handling and error management. This phase ensures the integrity of the data flow between the frontend and backend, preparing the APIs for live deployment.

- **Backend Deployment**:
  The backend is deployed using Render, a secure and scalable cloud platform. This step ensures the APIs are accessible in real-time and capable of handling concurrent requests from multiple users. Environment variables and configurations are managed securely to maintain data protection and application stability. Deployment testing verifies the smooth operation of all backend functionalities in the live environment.

- **Frontend Backend Integration**:
  The frontend and backend are integrated by connecting React components with the APIs developed in Express. This integration enables real-time functionalities such as dynamic profile updates, search results, and chatbot responses. The seamless communication between the frontend and backend is tested to ensure a consistent user experience across all workflows.

- **Frontend Deployment**:
  The frontend is deployed using Vercel, a platform optimized for fast, reli-

able, and globally accessible web applications. Vercel's CDN ensures quick load times and minimal latency, providing a responsive experience for users on any device. The deployment process includes testing for cross-browser compatibility and responsiveness to ensure a polished presentation.

- **Testing on Different Use Cases**:
  The final phase involves comprehensive testing to validate the application's functionality, performance, and usability. Test cases cover typical user scenarios, such as searching for centers, managing profiles, and accessing analytics, as well as edge cases like incorrect data inputs or unauthorized access attempts. Feedback gathered during this phase is used to refine the application further, ensuring a stable, secure, and fully functional platform for all stakeholders.

1.6 Problem Statement

The management of addiction treatment centers and counseling services has traditionally been fragmented and inefficient, relying on disparate systems or manual processes that make data access, sharing, and coordination difficult. This often leads to delayed decision-making, communication gaps between administrators, counselors, and patients, and challenges in maintaining secure and up-to-date records.

Additionally, privacy concerns regarding sensitive patient data and the lack of integration between various stakeholders exacerbate the problem. There is a clear need for a centralized, secure, and efficient system that streamlines the management of addiction treatment services, ensures seamless communication among stakeholders, improves data accessibility, and upholds patient privacy.

The proposed solution, the Centralized De-Addiction and Counseling Data Management Web Application, aims to address these challenges by centralizing critical data from addiction centers and counseling services, improving communication and collaboration, enhancing the accessibility of services, and ensuring the security and privacy of sensitive patient information. The system will offer dedicated interfaces for center administrators to efficiently manage center profiles, patient data, events, and communications, ultimately enhancing the quality and transparency of addiction treatment and counseling services.

1.7 Objective of the Project

The management of addiction treatment centers and counseling services has historically been plagued by inefficiencies and fragmentation. Existing systems, often manual or isolated, create barriers to effective communication, data sharing,

and coordinated decision-making. These limitations result in delays in service delivery, gaps in collaboration between administrators, counselors, and patients, and an inability to maintain accurate and secure records. Furthermore, the increasing digitization of healthcare highlights the pressing need to address privacy concerns related to sensitive patient data. Recognizing these challenges, the objective of this project is to develop a centralized, secure, and efficient system to revolutionize the management of addiction treatment services.

The proposed "Centralized De-Addiction and Counseling Data Management Web Application" is designed to address these systemic issues by providing a comprehensive platform that integrates and centralizes data from addiction centers and counseling services. This web application aims to streamline workflows, enhance data accessibility, and promote effective communication among stakeholders. By unifying fragmented processes, the system enables addiction treatment centers to operate more efficiently, ensuring that patients receive timely and high-quality care.

A central objective of the project is to improve communication and collaboration across the network of stakeholders involved in addiction treatment. The platform offers distinct interfaces for different users, including clients, center administrators, and government authorities. Clients can easily search for and connect with de-addiction centers tailored to their needs, while center administrators are empowered to manage profiles, patient records, and events. Government representatives gain access to anonymized patient data, enabling them to analyze trends, allocate resources, and evaluate the effectiveness of treatment programs. Data

security and privacy are paramount to the project's objectives. The platform incorporates robust security measures, such as encrypted password storage, secure authentication protocols, and role-based access control, ensuring that sensitive patient information remains protected from breaches or unauthorized access. By upholding stringent data privacy standards, the application fosters trust among its users, addressing one of the most critical concerns in the digitization of healthcare services.

Another key goal is to enhance the accessibility of addiction treatment services. The web application's intuitive design ensures that users can navigate the platform with ease, irrespective of their technical expertise. Features like an AI-powered chatbot provide real-time assistance, addressing user queries and guiding them through the platform. This accessibility reduces barriers for clients seeking support and ensures that help is always readily available, aligning with the mission to make addiction treatment resources more inclusive and user-centric.

The project also seeks to optimize operational efficiency through advanced data management tools. By enabling center administrators to perform Create, Read,

Update, and Delete (CRUD) operations on patient and event data, the platform eliminates redundant processes and improves the accuracy of record-keeping. Administrators can effortlessly update center profiles, schedule events, and track patient progress, resulting in better resource allocation and improved patient outcomes.

Furthermore, the system's deployment ensures scalability and reliability, allowing it to adapt to increasing user demands. The backend, hosted on Render, and the frontend, deployed on Vercel, guarantee seamless performance and real-time accessibility. These technical choices align with the project's objective to provide a future-proof solution that can evolve with the needs of the addiction treatment community.

The project will also aim to build a scalable system that can accommodate a large number of users at the same time. The platform will be built with scalability in mind, ensuring it can handle high traffic volumes during peak placement seasons. The system will be optimized for speed and performance to ensure smooth user experiences, with cloud-based infrastructure supporting simultaneous access by many users.

In summary, the "Centralized De-Addiction and Counseling Data Management Web Application" aspires to transform the landscape of addiction treatment services by addressing the inefficiencies and challenges of existing systems. Through its centralized, secure, and user-friendly platform, the project aims to improve communication, enhance service accessibility, uphold patient privacy, and optimize the management of critical data. This holistic approach not only supports the immediate operational needs of addiction centers but also contributes to the broader goal of fostering recovery and well-being in communities impacted by addiction.

2 Literature Survey

De-addiction and counseling centers play a pivotal role in addressing the pressing mental health challenges and substance abuse issues worldwide, particularly in low- and middle-income countries (LMICs) like India. Singh et al. (2019) investigate the acceptability of mental health facilities and de-addiction centers in India, presenting insights into the socio-cultural and systemic barriers to improving mental health care. Their research highlights the stigma surrounding mental health issues and substance abuse, which is exacerbated by insufficient facilities, uneven distribution of resources, and a lack of community-centric care models.

Insights from Singh et al. (2019)

The study by Singh et al. surveyed over 8,600 families across Indian states to understand the population's perceptions regarding mental health issues, the likelihood of contracting such disorders, and the adequacy of existing facilities. Despite societal stigma, a significant portion of respondents acknowledged the dire need for mental health and de-addiction centers. Education emerged as a critical determinant of treatment-seeking behavior, with more educated individuals preferring modern medical interventions over religious or traditional healers.

One of the significant findings was the mismatch between perceived risks of mental health and addiction problems and the acknowledged need for specialized facilities. While individuals underestimated their likelihood of experiencing these issues, they recognized the paucity of facilities to address them. This contradiction underscores the deep-rooted stigma and limited awareness about mental health disorders.

Related Studies and Observations

Global research complements these findings, emphasizing the challenges in bridging the treatment gap for mental health in LMICs. The World Health Organization estimates a treatment gap of over 75

Efforts in community mental health programs, as noted by Mendenhall et al. (2014), suggest that task-sharing between specialists and community health workers can effectively address this gap. Similar initiatives in India, such as the Shifa project in rural Madhya Pradesh, demonstrate the success of integrating mental health care into primary healthcare systems through community outreach.

However, systemic issues persist. Studies by Saxena et al. (2007) and Saraceno et al. (2007) highlight the inefficiencies and inequities in resource allocation for men-

tal health. Training non-specialist workers and leveraging traditional medicine practitioners through regulation and education have shown promise in expanding the reach of mental health care. These strategies align with Singh et al.'s recommendations for addressing India's mental health burden.

Addressing Stigma and Improving Access

Stigma remains a recurring theme in mental health literature. Bharadwaj et al. (2015) demonstrate how stigma reduces treatment-seeking behavior, leading to underreporting and delayed diagnosis. The social alienation experienced by patients, as documented by Koschorke et al. (2014), further compounds these issues. Gender disparities also emerge, with women facing heightened discrimination and neglect.

Community education initiatives, such as those discussed by Mathias et al. (2018), highlight the importance of building mental health literacy. Engaging religious leaders and traditional healers, who often serve as first points of contact in rural areas, offers another avenue for reducing stigma and guiding individuals toward professional care.

Rehab.com and Indianhelpline.com

Rehab.com is a comprehensive online platform dedicated to assisting individuals in finding appropriate drug and alcohol rehabilitation centers across the United States. The website offers a user-friendly interface that allows users to search for rehab facilities by state, city, or specific needs, ensuring personalized support for those seeking recovery options. In addition to location-based searches, Rehab.com provides information on various levels of care, including inpatient and outpatient programs, detox services, and specialized therapies. The platform also addresses specific populations by offering tailored programs for men, women, teenagers, veterans, and the LGBTQ+ community. To facilitate the financial aspect of treatment, Rehab.com includes resources on insurance coverage, helping users understand which facilities accept their insurance plans. Overall, Rehab.com serves as a valuable resource for individuals and families navigating the complexities of addiction treatment, offering guidance and support throughout the recovery journey.

Indianhelpline.com provides a dedicated de-addiction helpline section aimed at supporting individuals struggling with substance abuse in India. The platform lists national toll-free numbers, such as the National Free Drug De-addiction Helpline (1800-11-0031) and the Tobacco Quit Helpline (1800-11-2356), which operate from 8 am to 8 pm. Additionally, users can register for tobacco cessation by giving a missed call to 011-22901701 or through the National Health Portal.

Indianhelpline.com also features information about private premium de-addiction centers, like the Alpha Healing Center in Gujarat, known for its evidence-based treatments and holistic healing approaches. By consolidating these resources, Indianhelpline.com aims to provide accessible support for individuals seeking to overcome addiction and lead healthier lives.

Both platforms play crucial roles in connecting individuals with the necessary resources to combat addiction. While Rehab.com focuses on providing a comprehensive directory of rehabilitation services across the U.S., Indianhelpline.com caters to the Indian population by offering national helpline numbers and information on local de-addiction centers. These platforms exemplify the global effort to make addiction support services more accessible, ensuring that individuals seeking help can find appropriate resources tailored to their specific needs and locations.

The body of literature underscores the urgent need for comprehensive strategies to strengthen de-addiction and counseling services. While increasing the number of centers is crucial, equally important is the integration of community-based approaches, stigma reduction efforts, and capacity-building among healthcare workers. Singh et al.'s study, alongside global and national research, provides a blueprint for addressing the systemic and cultural barriers to mental health care, paving the way for more inclusive and accessible services.

3 System Requirements and Specification

A software requirement definition is an abstract description of the services which the system should provide, and the constraints under which the system must operate. One key aspect of a software requirement definition is its focus on the external behavior of the system. This means that it describes what the system should do, rather than how it should be implemented. By focusing on external behavior, the requirement definition remains independent of specific technologies or design choices, allowing for flexibility in implementation. It should only specify the external behavior of the system. The requirements are specified as below:

3.1 Functional Requirements

Functional requirements outline the specific features and capabilities that the Centralised De-addiction and Counselling Data Management Web Application project should have to meet its objectives. Here are some functional requirements for the project:

3.1.1 User Registration and Login

- Users can register using forms that collect and validate credentials such as email and passwords.
- Logged-in users gain access to personalized features while ensuring their unique identity on the platform.

User registration and login form the foundation of the application, allowing users to create accounts and authenticate securely. The system uses dynamic forms to validate data, ensuring all required fields are correctly filled. Registered users can log in to access functionalities tailored to their role, such as searching for centers or managing data. This feature promotes secure and personalized access while laying the groundwork for role-based interactions.

3.1.2 Secure Authentication

- JWT (JSON Web Tokens) are used to securely authenticate users after login.
- Encrypted tokens minimize risks associated with unauthorized access.

Secure authentication ensures that only verified users can access protected routes and features. JWT tokens, generated during login, act as encrypted credentials for subsequent requests. This approach not only enhances security but also provides a seamless experience by eliminating the need for repeated logins. The use of JWT ensures the platform remains safe from common vulnerabilities like session hijacking.

3.1.3 Role-Based Access Control

- Permissions are assigned based on user roles, such as administrators or regular users.
- Sensitive routes, like patient data, are accessible only to authorized roles.

Role-based access control (RBAC) ensures that users interact with the system according to their responsibilities. While administrators can manage patient and event data, regular users can access general information like center profiles. This segregation of access protects sensitive data and ensures that system resources are used appropriately, enhancing both security and usability.

3.1.4 Center Profile Creation and Management

- Administrators can create detailed profiles with information like services, location, and contact details.
- Profiles can be updated dynamically to reflect changes in services or operations.

Center profile management provides a comprehensive interface for centers to set up and maintain their profiles. Through extensive forms with validation, administrators ensure the accuracy and completeness of information. Profiles are dynamically displayed, helping users and other stakeholders access up-to-date details about a center's services, location, and contact information.

3.1.5 Feedback Submission for Centers

- Users can submit structured feedback forms to review or suggest improvements for centers.
- Administrators can review feedback to identify strengths and address weaknesses.

Feedback submission promotes transparency and service improvement. Users can share their experiences with centers through structured forms, providing valuable insights into service quality. Administrators can review this feedback to make data-driven improvements, enhancing client satisfaction and fostering trust between users and service providers.

3.1.6 Event and Patient Data Management

- Administrators can create, update, and manage records for events and patients.

- CRUD operations ensure efficient handling of all data, keeping records organized and accessible.

The event and patient data management module enables administrators to maintain accurate records. They can schedule events, track patient progress, and manage data using streamlined CRUD operations. This feature ensures that essential information is always accessible, reducing redundancy and improving operational efficiency within addiction centers.

3.1.7 Search and Filter Functionality

- Users can search for centers based on parameters like location, specialization, or name.
- Advanced filtering options refine search results to meet specific needs.

The search and filter functionality enhances accessibility by allowing users to locate relevant centers quickly. Whether searching by location, specialization, or specific services, users can find centers that meet their unique requirements. This feature ensures that individuals can connect with the right resources without unnecessary delays or complications.

3.1.8 Chatbot Integration

- The Gemini-powered chatbot offers real-time assistance for users navigating the platform.
- It provides answers to queries and guides users to relevant resources.

The AI-powered chatbot acts as a virtual assistant, improving user engagement and accessibility. Available 24/7, it answers questions, provides information about addiction treatment, and guides users through the platform. This ensures that users have access to immediate help, even outside standard operating hours, enhancing the overall user experience.

3.1.9 Navigation

- Clear menus and links provide intuitive movement between pages.
- Consistent layouts ensure users can easily locate desired functionalities.

Effective navigation ensures a seamless user experience across the platform. With well-organized menus and intuitive links, users can quickly move between sections like searching for centers or managing profiles. Consistent design and layouts reduce confusion, helping users complete tasks efficiently and with minimal effort.

3.1.10 Responsive Design

- The platform adjusts layouts dynamically to fit devices like smartphones, tablets, and desktops.
- Consistent user experience is maintained across all screen sizes.

Responsive design ensures the platform is accessible on various devices, enabling users to interact seamlessly regardless of their screen size. This adaptability broadens accessibility and ensures that the system meets the needs of diverse users, whether on a mobile phone or a desktop computer.

3.1.11 API Development

- RESTful APIs handle backend logic for CRUD operations on all models.
- APIs ensure smooth communication between the frontend and backend.

APIs act as the backbone of the platform, enabling interaction between the frontend and backend. By implementing RESTful principles, the APIs handle CRUD operations for models like users, centers, events, and patient data. This design ensures efficient data exchange and scalability, forming a reliable foundation for the system's functionality.

3.1.12 API Testing

- Postman is used to validate the functionality and reliability of each API endpoint.
- Testing ensures APIs handle edge cases and maintain data integrity.

Rigorous API testing guarantees the backend operates reliably under various conditions. Each endpoint is tested for proper functionality, error handling, and performance using Postman. This phase ensures that APIs deliver accurate responses and maintain consistent data integrity, reducing potential issues in the live environment.

3.1.13 Version Control

- GitHub repositories are used to manage the frontend and backend codebases.
- Collaboration is streamlined through version control, with changes tracked and merged seamlessly.

Version control ensures efficient and conflict-free collaboration among developers. By using separate GitHub repositories for the frontend and backend, team members can work on different components simultaneously. Features like pull requests and commit history provide transparency and organization, allowing for smooth integration of updates.

3.1.14 Deployment

- The backend is deployed on Render, ensuring reliable API availability.
- The frontend is deployed on Vercel for fast, global access.

Deployment ensures that the platform is accessible to users worldwide. Render hosts the backend, providing scalability and security for API operations, while Vercel ensures the frontend delivers a seamless experience with fast load times and high availability. These services ensure the platform operates efficiently in a live environment.

3.1.15 Secure Communication

- HTTPS encrypts data transmitted between the client and server.
- This ensures sensitive information, like login credentials, remains secure from interception.

Secure communication is achieved through HTTPS, protecting data exchanged across the platform. By encrypting traffic, sensitive information like login credentials, patient records, and event details is safeguarded against unauthorized access. This feature ensures compliance with security standards and fosters user trust in the application.

3.2 Non-Functional Requirements

Non-functional requirements are crucial aspects of a system that define how it should behave in terms of performance, scalability,reliability, usability, security, and maintainability. These requirements focus on the overall user experience, system performance, and how well the system can adapt to changing conditions and requirements. For a Centralised De-addiction and Counselling Data Management Web Application, these requirements play a critical role in ensuring that the application is not only functional but also user-friendly, secure, and reliable.

Non-functional requirements are requirements that specify how a system should behave, rather than what it should do. Non-functional requirements a de-addiction system might include:

3.2.1 Scalability

- The platform is designed to accommodate a growing number of users, centers, events, and patient records without degradation in performance.
- Infrastructure choices, such as Render for backend deployment and Vercel for frontend hosting, ensure that the system can scale seamlessly with increased demand.

Scalability is a cornerstone of the application, enabling it to handle a high volume of concurrent users and extensive data operations. With a robust architecture and cloud-based deployments, the system ensures that performance remains consistent even as the number of registered centers, events, and patients grows. This capability positions the platform as a future-proof solution for expanding networks and evolving requirements in addiction treatment services.

3.2.2 Performance

- Optimized APIs and frontend frameworks ensure quick responses to user queries and seamless interactions.
- The use of caching, efficient database queries, and content delivery networks (CDNs) minimizes latency and enhances page load speeds.

Performance is critical to providing a smooth user experience. The platform is optimized to load pages quickly and respond to user actions in real-time. Efficient database design and streamlined code minimize bottlenecks, ensuring users can navigate the application and perform tasks without delays. This focus on performance ensures the platform remains responsive, even under heavy loads, maintaining user satisfaction.

3.2.3 Reliability

- Comprehensive error handling ensures the system continues functioning smoothly during unexpected events.
- Redundancy measures and regular testing prevent crashes and minimize downtime.

Reliability ensures that the application operates seamlessly, even under adverse conditions. Robust error-handling mechanisms capture and address issues without disrupting the user experience. Additionally, redundancy in deployment and rigorous testing ensures that the system remains operational, providing users with uninterrupted access to essential services and data.

3.2.4 Security

- Sensitive information, such as patient data and passwords, is encrypted using advanced algorithms and secure communication protocols like HTTPS.
- Role-based access control restricts unauthorized users from accessing confidential information, enhancing data protection.

Security is a top priority for the platform, particularly given the sensitive nature of patient data. The system employs industry-standard encryption techniques

and secure authentication protocols to safeguard user information. Additionally, access control mechanisms ensure that data is only accessible to authorized users, fostering trust and compliance with privacy regulations.

3.2.5 Maintainability

- The project is built using modular code, allowing developers to update individual components without affecting the entire system.
- Proper documentation and version control ensure smooth transitions during updates or team changes.

Maintainability ensures the system remains adaptable to evolving needs. By adhering to modular coding practices, developers can easily modify or expand features without disrupting existing functionality. Clear documentation and a structured version control system further facilitate efficient updates and maintenance, extending the platform's lifespan and relevance.

3.2.6 Usability

- The platform's intuitive design and user-friendly interfaces enable users to achieve their goals with minimal effort.
- Features like responsive design and clear navigation cater to diverse user groups, ensuring accessibility for all.

Usability is central to the platform's success, ensuring that users can interact with it effectively and efficiently. By prioritizing simplicity and clarity, the system helps clients, administrators, and government users navigate and complete tasks with ease. Features like responsive design and intuitive layouts enhance accessibility, creating a positive user experience across all devices and demographics.

3.3 Product Requirements

Product requirements outline the essential specifications necessary for the smooth operation of the De-Addiction and Counseling Web Application. These requirements are as follows:

- Hardware Requirements
  - The project's hardware requirements are designed to support seamless operation for both server and client devices. The server must have adequate CPU capacity and storage to host backend services efficiently, ensuring smooth handling of data operations and API requests. Client

devices include any modern device with a web browser, such as desktops, tablets, or smartphones, allowing users to access the platform without specialized hardware. This inclusive approach ensures that users with diverse devices can interact with the system seamlessly, making it accessible to a wide audience.

- Software Requirements
  - The software stack for the project is optimized for compatibility and performance across various platforms. The system supports cross-platform operation on Windows, macOS, and Linux, ensuring flexibility for deployment. A modern web browser, such as Google Chrome, Mozilla Firefox, Safari, or Microsoft Edge, is required for accessing the application. Development tools include Node.js (v16 or above) for backend operations, MongoDB (v5 or above) for database management, and Git for version control. Hosting is managed through Render for backend deployment and Vercel for frontend hosting, ensuring robust and scalable application performance.
- Network Requirements
  - The platform requires a stable internet connection for smooth interaction between client devices and server services. Adequate internet speed ensures real-time communication and fast data processing. RESTful API endpoints are designed to be secure and accessible, enabling efficient handling of user requests and data exchange. This combination of reliable network infrastructure and secure APIs guarantees uninterrupted operation and a seamless user experience.
- Third-Party Integrations
  - Several third-party tools and integrations enhance the functionality and reliability of the platform. Postman is utilized during development for testing API endpoints, ensuring they function correctly under various scenarios. The system also integrates a Gemini-powered chatbot, which offers intelligent query handling and user assistance. These integrations improve the development process and enhance the platform's usability by providing advanced features and real-time support.
- Security Requirements
  - Robust security measures are implemented to protect sensitive data and ensure safe interactions. Authentication is managed using JSON Web Tokens (JWT), providing secure login mechanisms. All communication between client and server is encrypted using HTTPS, preventing unauthorized access or interception of data. Role-based access control

further secures the platform by restricting permissions based on user roles, ensuring that confidential information is only accessible to authorized individuals.

- Database Requirements
  - The platform employs MongoDB as its database solution, which is highly scalable and efficient for storing structured and unstructured data. It is used to manage user profiles, center information, event details, and feedback data. MongoDB's flexibility and support for complex queries make it ideal for handling the varied data requirements of the platform. This ensures reliable storage and retrieval of information, even as the system grows in complexity and scale.
- User Interface Requirements
  - The user interface is designed to be responsive and accessible on a variety of devices, including desktops, tablets, and smartphones. Compatibility with different screen sizes ensures a consistent experience across all platforms. A clean and intuitive layout helps users navigate the system effortlessly, enabling them to achieve their goals with minimal effort. This emphasis on responsive design broadens the platform's reach and usability for diverse user groups.
- Deployment Requirements
  - Deployment ensures that the application is accessible and performs efficiently in live environments. The frontend is hosted on Vercel, providing fast load times and scalability to accommodate increasing user demands. The backend is deployed on Render, which offers continuous integration and deployment pipelines, ensuring seamless updates and reliable API operations. Together, these deployment solutions ensure that the platform remains robust, scalable, and responsive.

4 System Design

4.1 System Development Methodology

4.1.1 Development Methodology

The development process followed an iterative and modular approach, ensuring rapid prototyping, testing, and integration. Each layer of the application was developed with scalability and maintainability in mind.

The frontend was built using React, leveraging its component-based architecture for reusable and modular UI components. Styling was handled with Material-UI and Tailwind CSS, ensuring responsive design across devices.

The backend was developed using Node.js with Express.js, offering a RESTful API architecture. Middleware functions ensure secure request handling, and modular routes and controllers make the backend codebase manageable.

MongoDB was chosen as the primary database for its flexibility with unstructured data. Schemas were designed with Mongoose, ensuring proper relationships between models like users, patients, events, and feedback.

GitHub facilitated collaborative development, providing tools for issue tracking, pull requests, and code reviews. Branching strategies were used for efficient teamwork and bug tracking.

The frontend was hosted on Vercel, optimized for delivering static content quickly, while the backend APIs were deployed on Render, ensuring high availability and scalability.

4.1.2 Authentication

Authentication was designed with security and ease of use as priorities. Key features include:

- **JWT (JSON Web Tokens)**: Used for secure authentication. Tokens are generated upon successful login and are validated with each API request.
- **Password Encryption**: Passwords are hashed using bcrypt to prevent plain-text storage, ensuring data security even if the database is compromised.
- **Session Management** :Tokens are stored securely (e.g., HttpOnly cookies or local storage), and session timeouts are implemented to minimize security risks.

- **Role-Based Access Control (RBAC)** :Different user roles are defined, with access permissions tailored to each role. This ensures that sensitive operations are restricted to authorized users only.

4.1.3 Data Management

The system efficiently handles both event data and patient data, ensuring consistency and reliability:

- **Patient Data**: Includes personal details, treatment history, and counseling notes. Data integrity is maintained through validation rules in Mongoose schemas.
- **Event Data**: Includes event schedules, and event logs. Events are categorized and timestamped, enabling easy retrieval and tracking.
- **Database Relationships** :Relationships between models (e.g., User - Centre, Centre - Feedback, Centre - Patients) are established through ObjectIDs, ensuring referential integrity.
- **Data Validation** :Both server-side and client-side validations ensure that only valid and complete data is processed.

4.1.4 Search

The search functionality for centers was designed to help users locate specific de-addiction centers based on parameters like name, state, city, or specialization. This was implemented using MongoDB queries with filtering criteria dynamically applied via API endpoints. The backend efficiently retrieves results by leveraging indexes on frequently searched fields, ensuring fast performance. On the frontend, users can input search terms through a form, and the results are displayed in real-time using React's state management. The system ensures scalability, allowing users to filter and search even as the database grows, providing an intuitive and responsive experience.

4.1.5 Profile Setup and Display

User profiles provide a personalized and interactive experience:

- **Profile Setup:** Users can create detailed profiles during registration, including profile photos, phone numbers, and location details.
- **Dynamic Updates:** Profiles are editable, allowing users to update their information as needed.
- **Display and Customization:** Profiles are designed with clean layouts, displaying relevant information such as contact details, role-specific statistics (e.g., patient count for a center), and recent activities.

4.1.6 AI-Powered Chatbot Assistant

The AI-Powered Chatbot Assistant, built on the Gemini AI framework, serves as an interactive tool to assist users in addressing their concerns and inquiries. It allows users to ask questions or seek guidance about various issues, such as identifying the type of addiction they might be dealing with or understanding the treatment options available. The chatbot leverages natural language processing to provide accurate and context-aware responses, ensuring a user-friendly and supportive experience. Its integration into the system ensures that users can access immediate help, making the platform more accessible and responsive to individual needs.

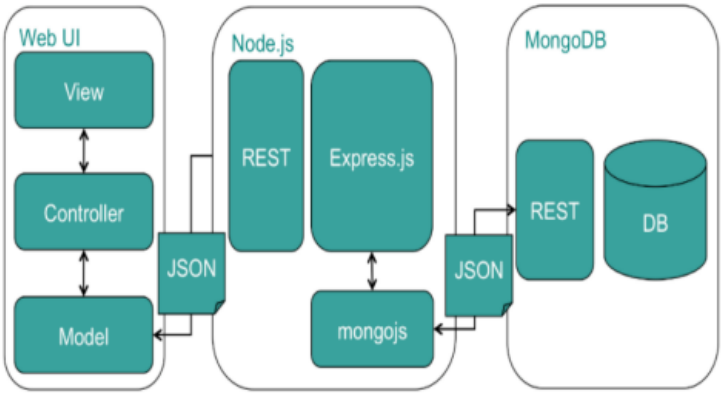

Figure 1: System Architecture Diagram

5 Results

5.1 Landing Page

The Landing Page of the DeAddict web application is designed to provide an inviting and user-friendly introduction to the platform's purpose and services. At the top, the page prominently displays the project name, "DeAddict," accompanied by the tagline, "Deaddiction and Counselling For You." This immediately conveys the application's focus on supporting users seeking addiction treatment and counseling. A short description further emphasizes the system's role in providing critical information and managing de-addiction and counseling-related data.

The page employs a clean and modern design with soft, calming colors that are visually appealing and relevant to the theme of healthcare and counseling. The layout is simple yet effective, allowing users to focus on the core message without being overwhelmed by unnecessary elements. A visually engaging illustration complements the header text, symbolizing collaboration and healthcare, and sets a welcoming tone for new users.

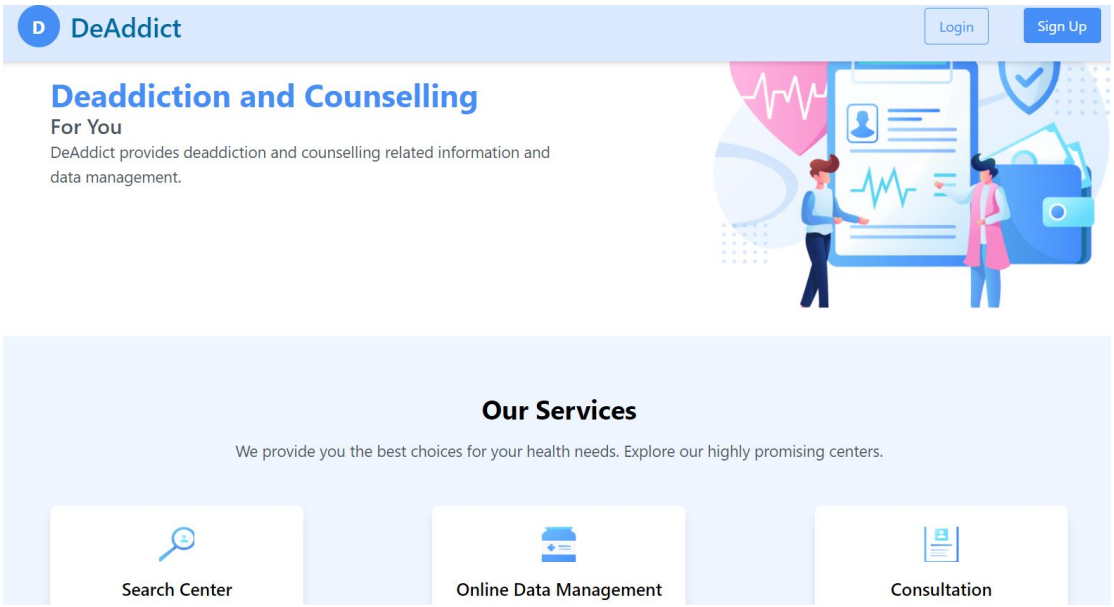

Figure 2: Landing Page - Overview

A prominent navigation bar is located at the top-right corner of the page, featuring "Login" and "Sign Up" buttons. These buttons make it easy for users to quickly access authentication options. Their placement ensures they are accessible at first glance, catering to both returning users who need to log in and new users who wish to register. The simplicity of this design enhances usability and minimizes friction during user interactions.

Below the header section, the "Our Services" section outlines the primary functionalities offered by the platform. Key services, such as "Search Center," "Online Data Management," and "Consultation," are displayed with icons and brief descriptions, making it easy for users to understand the core features at a glance. This section serves as a quick overview, encouraging users to explore the platform's comprehensive offerings for de-addiction and counseling needs.

The design of the page ensures responsiveness, allowing it to adapt seamlessly to various devices, including desktops, tablets, and smartphones. This ensures that users can interact with the application efficiently, regardless of their device. The well-structured layout and intuitive navigation demonstrate the platform's commitment to providing a smooth and effective user experience.

Overall, this landing page serves as the gateway to the DeAddict platform, blending functionality with a user-centric design. It highlights the application's purpose, promotes its services, and provides clear pathways for users to engage with the system, all while maintaining a professional and approachable aesthetic.

5.2 Authentication

Authentication is a fundamental aspect of web applications, ensuring that users can securely access and interact with the platform. It plays a critical role in maintaining data privacy and ensuring only authorized individuals can perform specific actions within the system. In the context of the Centralized De-Addiction and Counseling Data Management Web Application, authentication is implemented using secure techniques like JWT (JSON Web Tokens) and password hashing. This process not only provides a seamless user experience but also safeguards sensitive information such as patient records and operational data.

5.2.1 Signup Page

The Sign-Up Page is the gateway for new users to join the platform, designed with a focus on simplicity and a seamless user experience. It enables users to create accounts by submitting their email and password, through a clean and intuitive interface. The goal is to provide a user-friendly and efficient process for onboarding all types of users, from administrators to government officials and general users.

The page includes three key input fields: email, password, and password confirmation. These fields are validated in real-time to prevent errors and ensure the integrity of the submitted data. Email addresses are checked for proper formatting, while passwords must meet specific criteria, such as minimum length and complexity. The password confirmation field ensures users accurately re-enter their password, reducing the likelihood of errors during registration.

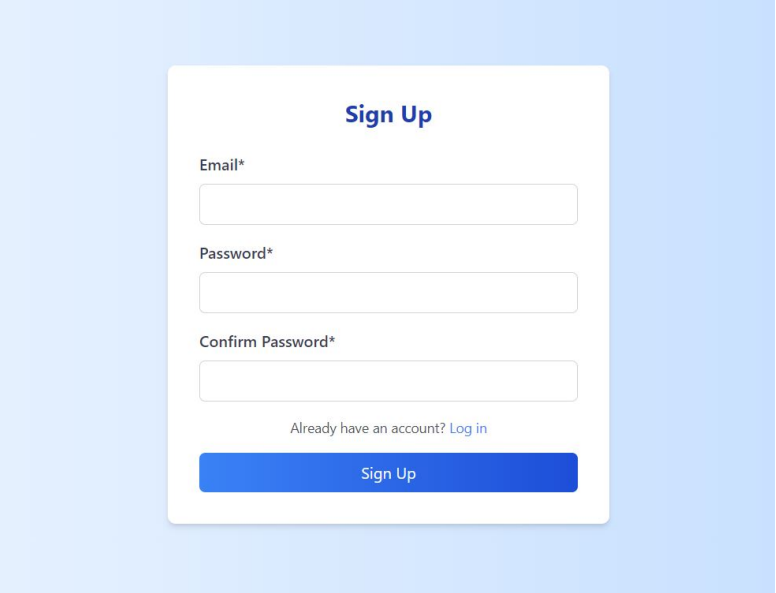

Figure 3: Signup Page - Overview

Security is a cornerstone of the sign-up process. Passwords are hashed using secure algorithms like bcrypt before being stored, and HTTPS ensures data encryption during transmission. The system also checks for duplicate email addresses to prevent multiple registrations with the same credentials.

The page's design focuses on simplicity and accessibility, featuring a clean, responsive layout compatible with all devices. It includes navigation links, such as the option to switch to the login page, enhancing usability. Its scalability allows for future integrations like third-party authentication or CAPTCHA for added security.

Overall, the sign-up page combines robust security measures with user-friendly design, ensuring a seamless and secure onboarding process for all types of users.

5.2.2 Login Page

The Login Page provides users with a secure and efficient way to access their accounts. It features two primary input fields: email and password, both validated to ensure proper format and prevent login errors. Users are notified immediately of any incorrect inputs or authentication failures through clear error messages, enhancing user experience and clarity.

Security is a key focus of the login process. Passwords entered are hashed and compared with securely stored hashes in the database, ensuring sensitive information is never exposed. The page also incorporates JSON Web Tokens (JWT) for session management, allowing users to maintain authenticated sessions securely.

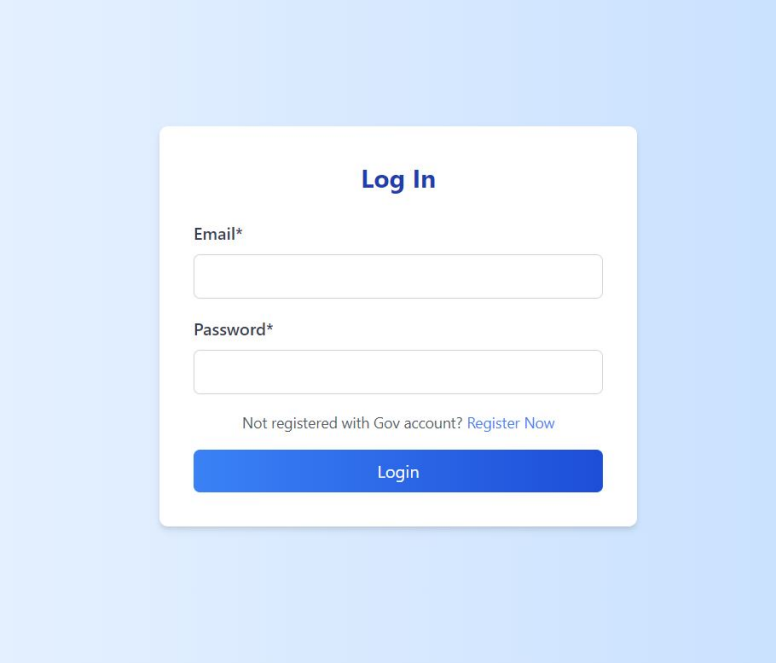

Figure 4: Login Page

Data transmission is protected using the HTTPS protocol to prevent interception or tampering.

The design emphasizes simplicity and functionality. Its responsive layout ensures compatibility across desktops, tablets, and mobile devices. Additional features like "Forgot Password" links or a redirection to the sign-up page improve navigation and provide a comprehensive user journey.

The login page is built for scalability and reliability, handling multiple user logins simultaneously without compromising performance. Its intuitive design and robust backend make it a crucial component of the web application, delivering a secure and seamless authentication experience.

5.3 Profile Page

5.3.1 Profile Page Set Up

The form collects essential details such as the center's name, location, contact information, and the type of facility they operate (e.g., residential, outpatient, detoxification center, day program center). It also allows centers to specify their areas of specialization, including alcohol and drug addiction, behavioral addiction, mental health treatment, and specific conditions like anxiety and depression.

Additionally, the form captures information about the center's target audience,

such as whether they offer services for teenagers and adolescents, family-centered treatments, gender-specific programs, or programs tailored to specific cultural backgrounds. This information helps potential clients find the most suitable center for their needs.

The collected data is then integrated into a centralized database within the web application, enabling users to easily search for and compare rehabilitation centers based on their specific requirements. This platform aims to improve access to quality addiction treatment services and facilitate better coordination between centers and the government in managing patient data and overseeing the delivery of care.

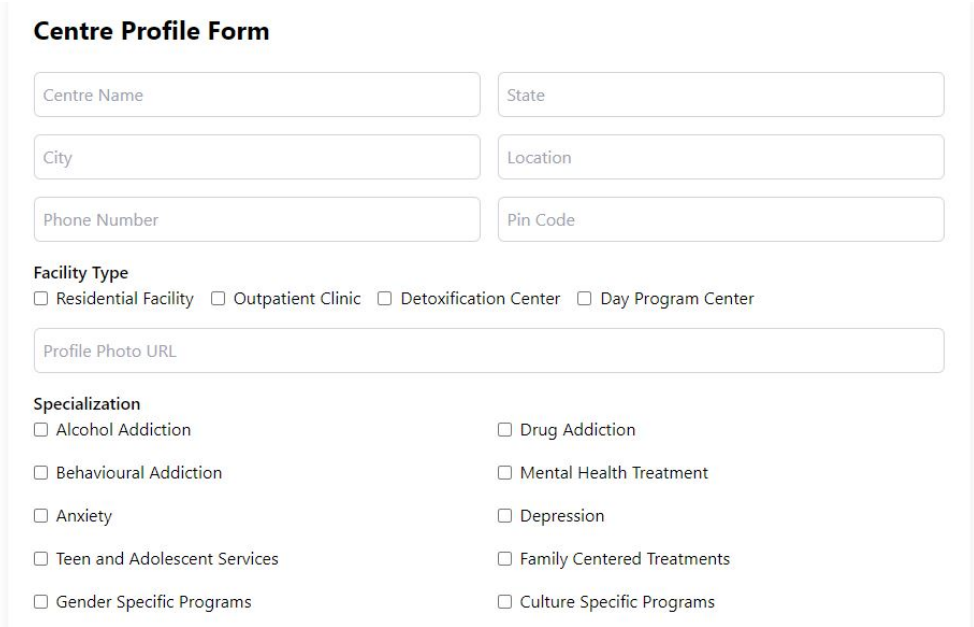

Figure 5: Profile Page Setup Form 1 - Overview

Additionally, this section of the form delves into the operational aspects of the center. It asks for details such as the treatment approaches used, the specific programs offered, the number of beds and staff available, and the center's operating hours. This information provides potential clients and the government with a comprehensive understanding of the center's capabilities and resources.

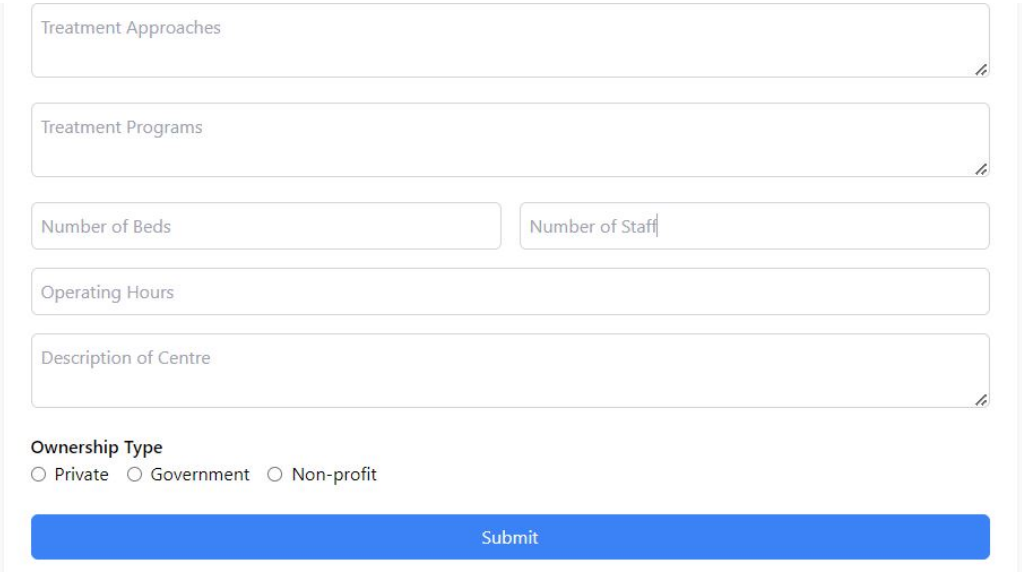

Figure 6: Profile Page Setup Form 2 - Overview

5.3.2 Profile Page Overview

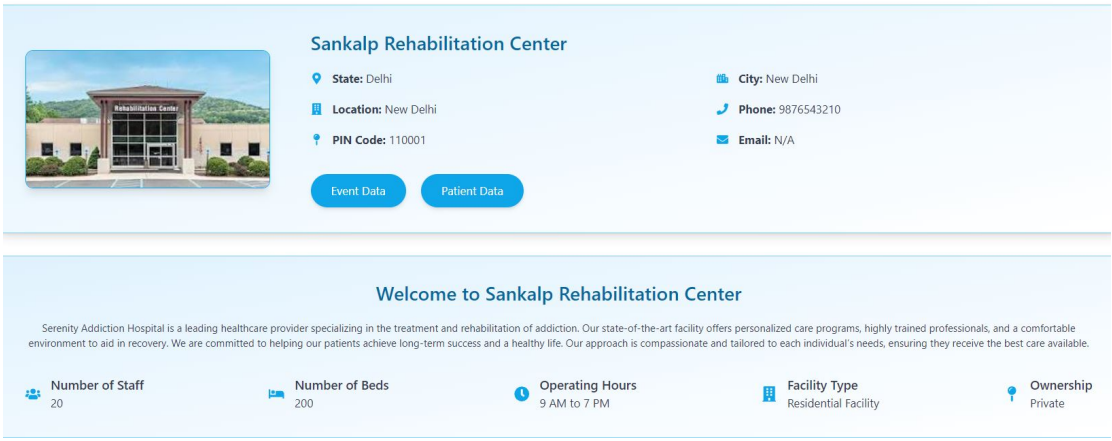

Figure 7: Profile Page 1 - Overview

The first page of the profile showcases a snapshot of the rehabilitation center, including its name, location details, contact information, and a brief description of the facility and its services. This overview provides potential clients with a quick understanding of the center's offerings and allows them to make an informed decision about whether to explore the center further.

The page also includes essential operational details, such as the number of staff

and beds available, operating hours, and the type of facility (residential or non-residential). This information is crucial for potential clients to assess whether the center aligns with their specific needs and preferences.

The centralized platform aims to improve access to quality addiction treatment services by providing a comprehensive and easily searchable database of rehabilitation centers. By making key information about each center readily available, potential clients can make informed choices about their treatment options and find the most suitable facility for their needs. Additionally, the platform facilitates better coordination between centers and the government in managing patient data and overseeing the delivery of care.

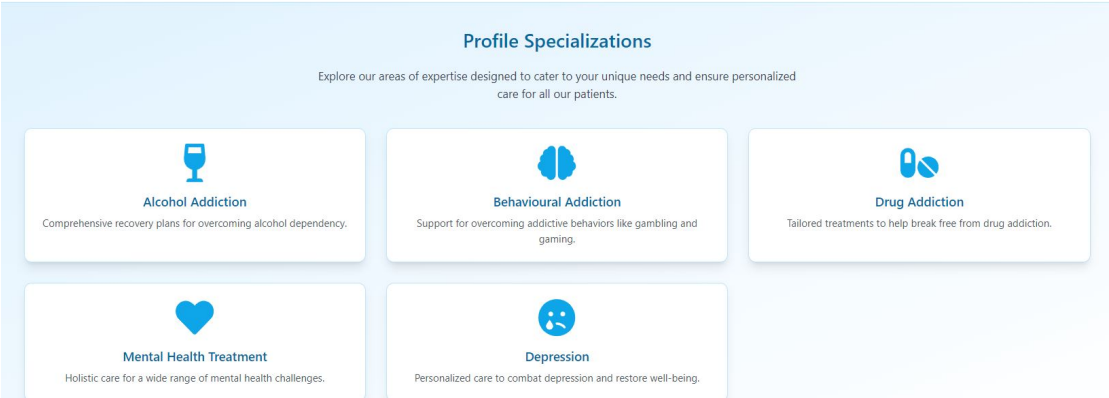

Figure 8: Profile Page 2 - Overview

This section titled "Profile Specializations" is designed to inform users about the specific treatment areas offered by a rehabilitation center. This section represents each specialization, enhancing readability and engagement. It provides brief overviews of the services offered in areas such as Alcohol Addiction, Behavioral Addiction (including gambling and gaming), Drug Addiction, Mental Health Treatment, and Depression.

This clear presentation of the center's expertise enables potential clients to quickly identify whether the center is suitable for their specific needs. By highlighting the center's areas of focus, this section helps users make informed decisions about their treatment options.

The overall design and presentation of this section effectively communicate the center's treatment capabilities and its commitment to providing comprehensive care for individuals struggling with addiction and mental health challenges.

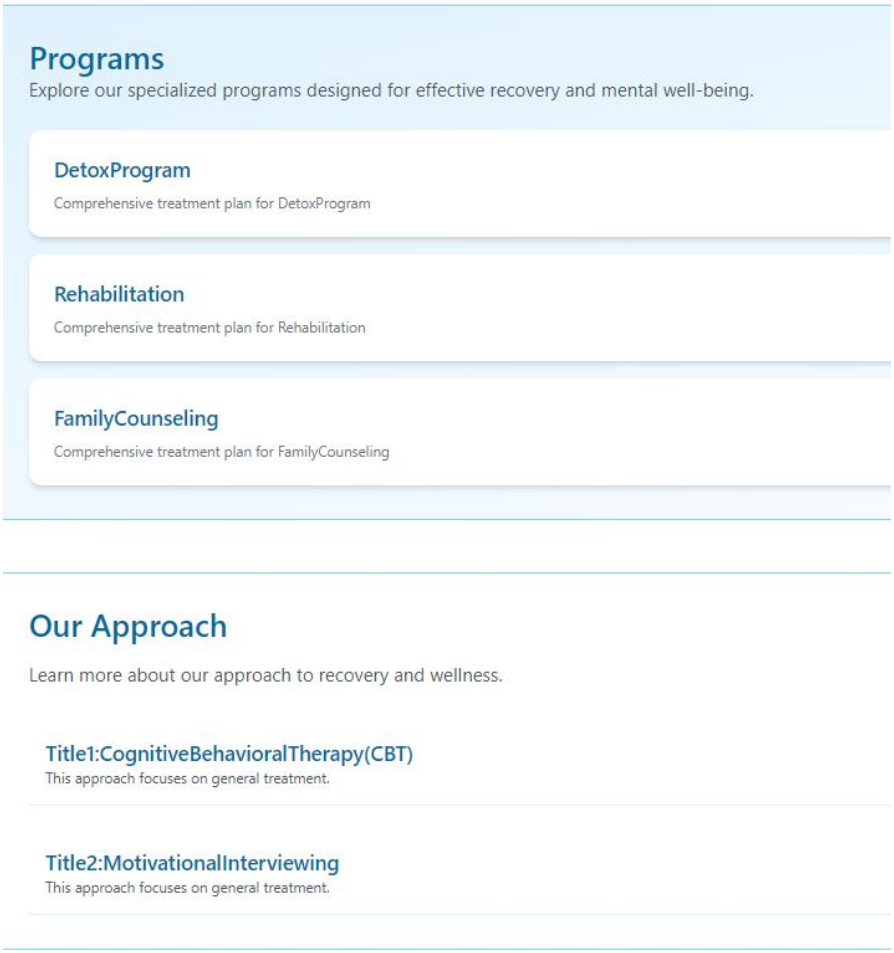

Figure 9: Profile Page 3 - Overview

Under the "Programs" section, the center outlines three key treatment pathways: a Detox Program, a Rehabilitation program, and Family Counseling. Each program is described as having a comprehensive treatment plan, suggesting a structured and multi-faceted approach to addressing addiction and related issues.

The "Our Approach" section introduces two therapeutic methodologies: Cognitive Behavioral Therapy (CBT) and Motivational Interviewing. While both approaches are described as focusing on general treatment, they likely represent distinct strategies for addressing addiction and promoting recovery. CBT typically focuses on identifying and modifying negative thought patterns and behaviors, while Motivational Interviewing emphasizes increasing intrinsic motivation for change through collaborative conversations.

This section of the webpage provides potential clients with valuable information about the treatment options available at the center, enabling them to make in-

formed decisions about their care.

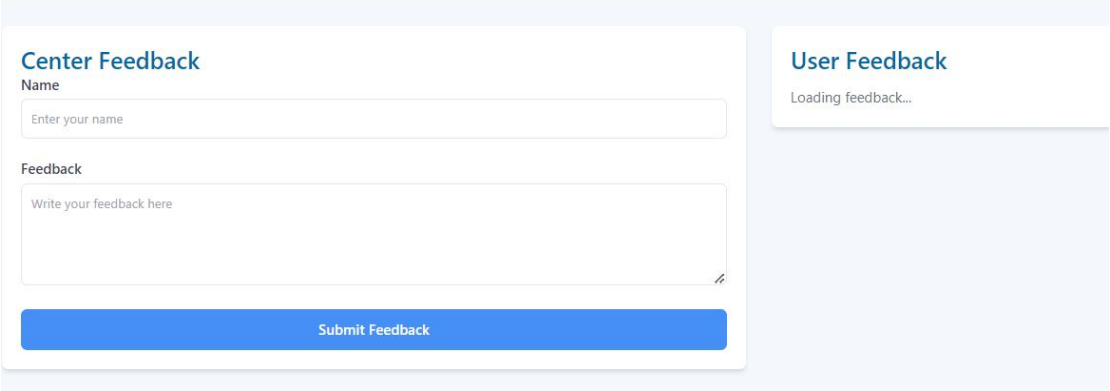

Figure 10: Profile Page 4 - Overview

The "Center Feedback" section of this webpage is a dedicated space for users to provide their input and feedback on the center's services. It features a user-friendly design with clear labels and a spacious text area for detailed feedback. Users are prompted to enter their name and then provide their feedback in the designated area. A prominent blue "Submit Feedback" button facilitates easy submission of the feedback.

This feedback mechanism is likely implemented to gather valuable insights from users about their experiences with the center. The collected feedback can be used to identify areas for improvement, address specific concerns, and enhance the overall quality of services offered. By actively soliciting and incorporating user feedback, the center demonstrates a commitment to continuous improvement and a focus on providing the best possible experience for its clients.

The right side of the page showcases a "User Feedback" section, which likely displays previously submitted feedback from other users. This feature can be beneficial as it allows potential clients to gain insights into the experiences of others and make informed decisions about their own treatment options.

5.4 Event Data

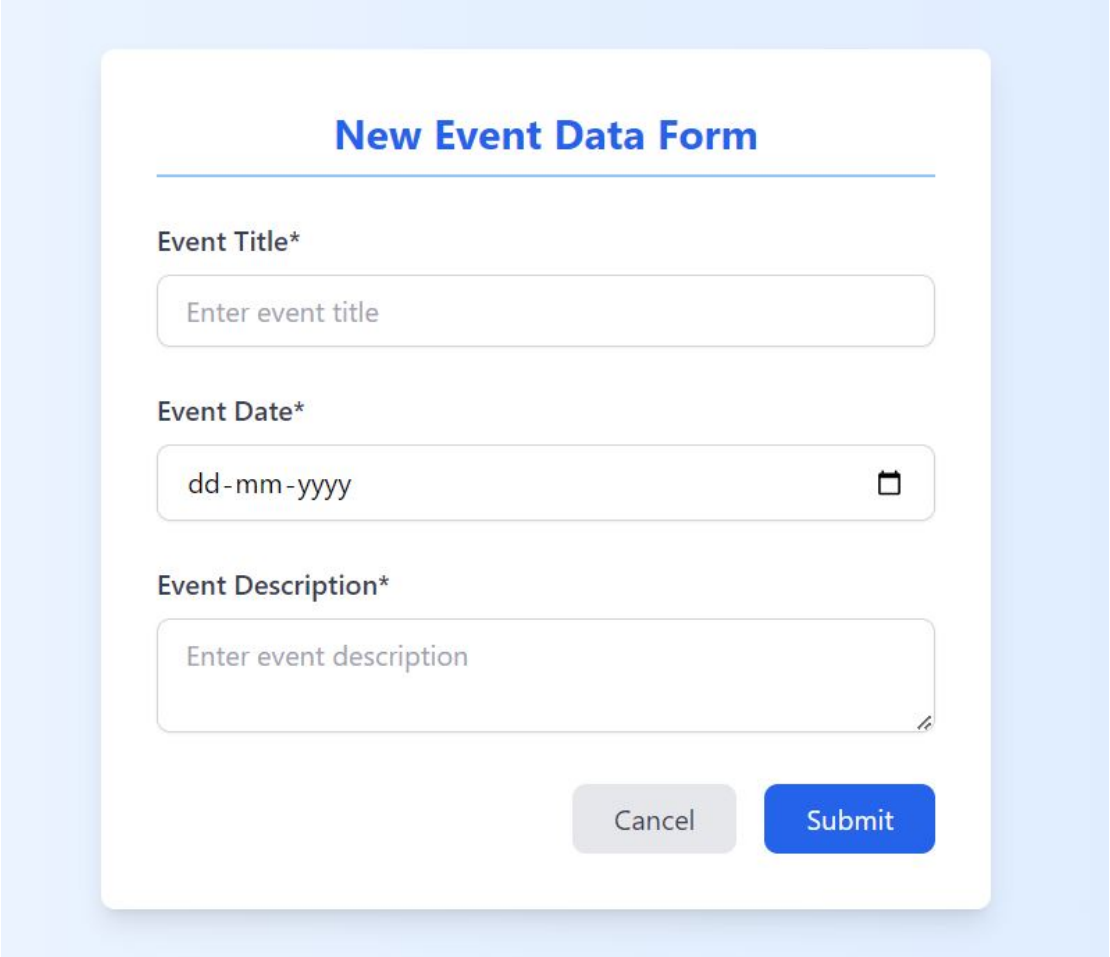

Figure 11: New Event Data Form - Overview

The "New Event Data Form" is used for creating and managing events. This form serves as the primary interface for capturing essential event information.

Key fields include "Event Title," "Event Date," and "Event Description," all marked as required. The date field likely integrates a calendar icon for convenient date selection. Users can submit the entered event data using the "Submit" button or discard the information and exit the form using the "Cancel" button.

The form's design is clean and user-friendly, with clear labels and a straightforward layout. This streamlined approach enhances the user experience and ensures that event data is accurately and efficiently entered into the system.

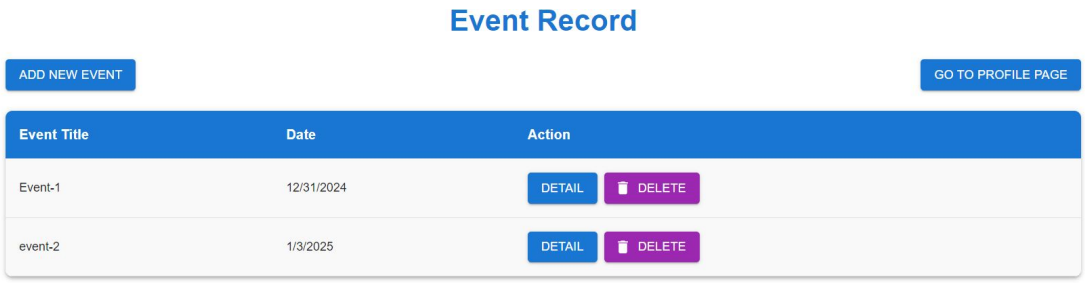

Figure 12: Event Record - Overview

The "Event Record" section appears to be a record or log of past events. The section displays a table with columns for "Event Title," "Date," and "Action." Each row represents a recorded event, listing its title and date.

The "Action" column provides two options for each event: "DETAIL" and "DELETE." The "DETAIL" button likely opens a more detailed view of the selected event, providing additional information. The "DELETE" button allows users to remove the selected event from the record.

The section includes buttons for navigation. The "ADD NEW EVENT" button presumably takes the user to a form or interface for creating a new event entry. The "GO TO PROFILE PAGE" button likely directs the user to their profile page within the application. This section offers a clear and organized view of past events, enabling users to easily manage and access event information.

5.5 Patient Data

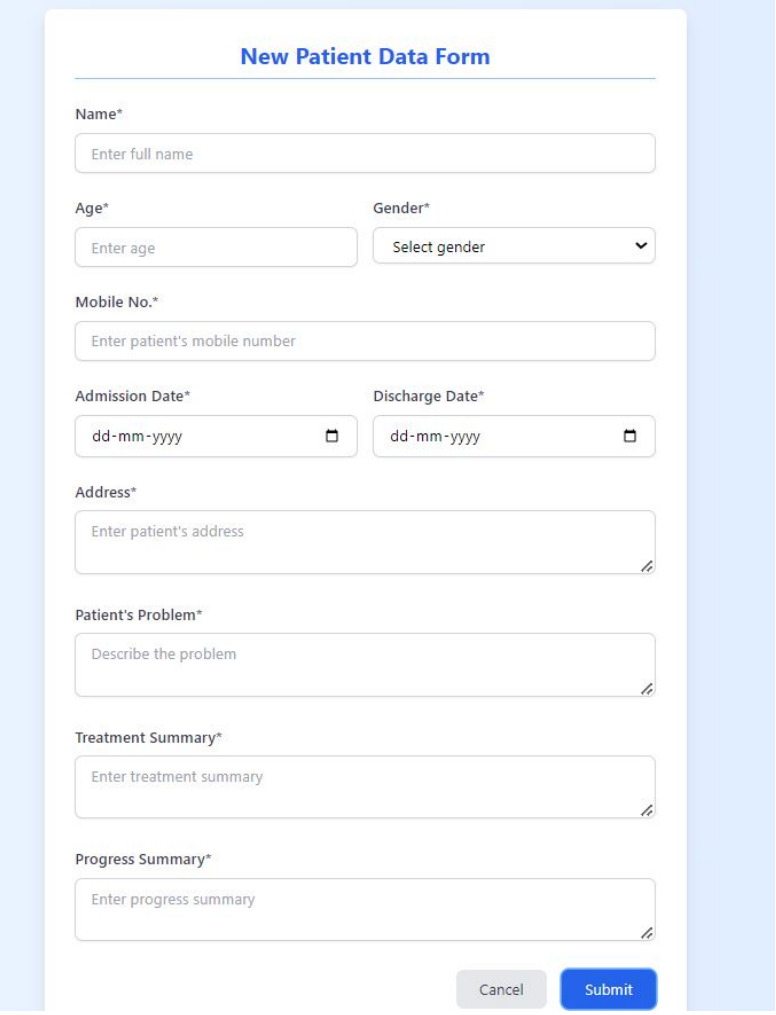

Figure 13: Adding new patient data - Overview

The form titled "New Patient Data Form," is designed to collect detailed patient information for healthcare or management purposes. The layout is clean and well-structured, ensuring a user-friendly interface for data entry.

The form begins with fields for basic information such as Name, Age, Gender, and Mobile Number. These fields are marked with an asterisk (*), indicating that they are mandatory. The Gender field is presented as a dropdown menu for easy selection, and the Mobile Number field is likely validated to ensure the input is accurate and functional for communication purposes.

Following the basic details, the form includes fields for Admission Date and Discharge Date, essential for documenting the treatment timeline. These fields utilize a calendar widget, enabling users to select dates conveniently and reducing the risk

of errors. The next section, the Address field, provides a space to input location details, ensuring comprehensive patient documentation.

Lastly, the form gathers additional details in three separate text areas: Patient's Problem, Treatment Summary, and Progress Summary. These sections allow for a detailed description of the patient's condition, the treatment provided, and progress made during care. The form concludes with "Submit" and "Cancel" buttons, providing users with straightforward actions to finalize or discard the entered data.

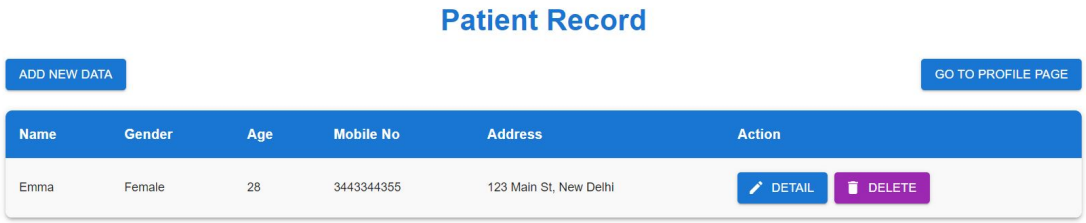

Figure 14: Event Record - Overview

The title "Patient Record" is prominently displayed, indicating the purpose of this interface. Below the title, there are two buttons: "Add New Data," allowing users to create a new patient record, and "Go to Profile Page," which likely redirects to a summary or detailed profile section.

The central section of this interface is a table that displays the patient's information in a clear, tabular format. The table has columns for Name, Gender, Age, Mobile Number, and Address, along with an Action column. The displayed record includes a sample patient entry named Emma, providing a quick overview of their demographic and contact details. The Action column offers two functional buttons for each record: "Detail," which likely opens a detailed view of the patient's information, and "Delete," allowing users to remove the record from the system. The color-coding of these buttons ensures clarity, with blue for viewing details and purple for deletion. The organized layout ensures that users can efficiently access, update, or manage patient records.

5.6 Search Page

1. User-Friendly Search: The page presents a clean and intuitive interface with a prominent "Find a Deaddiction Centre" heading.
The search bar is clearly visible, prompting users to enter their search query using keywords like name, state, city, or specialization.
The "Search" button is strategically placed for easy access, encouraging users to initiate their search.

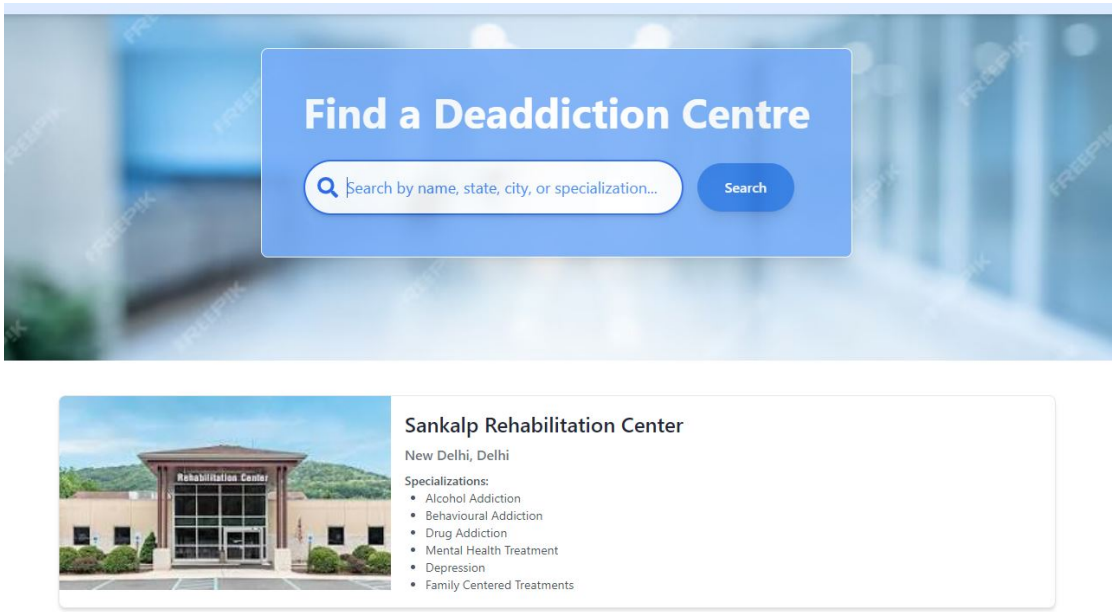

Figure 15: Search Page - Overview

2. Comprehensive Search Capabilities:
The search bar allows for flexible search queries, catering to users with different search criteria.
Users can search by the name of the deaddiction center, the state or city where it is located, or the specific addiction type they are seeking treatment for.
This flexibility ensures that users can easily locate the most relevant deaddiction centers based on their individual needs.

3. Clear and Concise Information: The search results page displays key information about the deaddiction center, including its name, location, and specializations. The "Specializations" section lists the specific types of addictions the center treats, such as alcohol addiction, drug addiction, and mental health issues.
This concise presentation allows users to quickly assess the suitability of a particular deaddiction center and make informed decisions about their treatment options.

5.7 ChatBot

- **Addiction Assessment:** The chatbot utilizes a framework to guide users in assessing whether their behavior might be indicative of addiction. It focuses on key factors like loss of control, negative consequences, withdrawal symptoms, tolerance, and continued use despite harm.
- **Personalized Information:** The chatbot provides relevant information and guidance tailored to the user's specific concerns about their behavior.

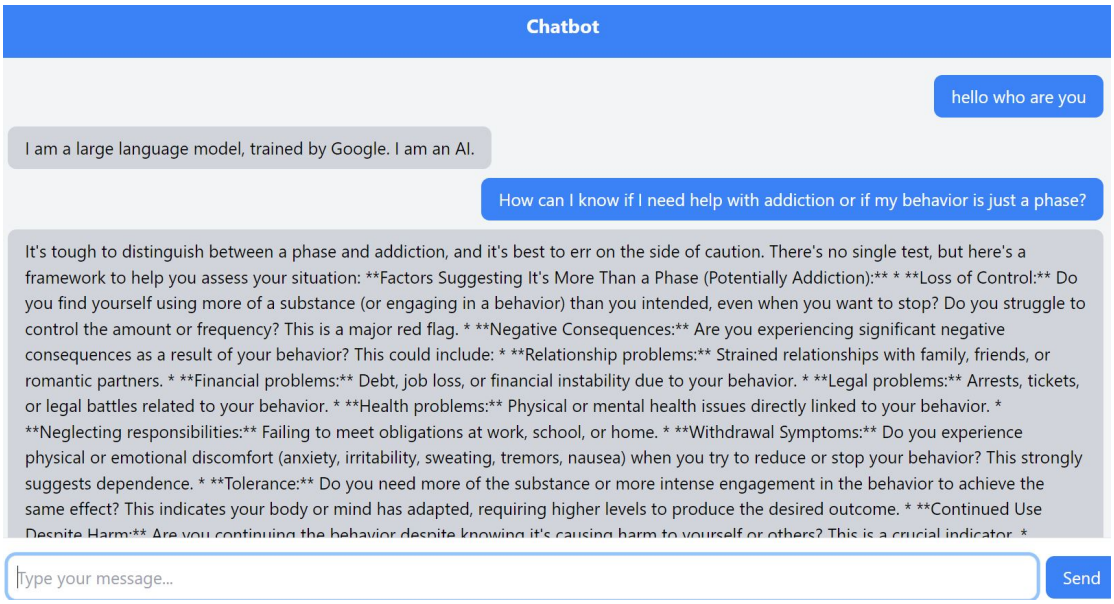

Figure 16: ChatBot Page - Overview

- **User-Friendly Interface:** The chatbot presents a clean and intuitive interface, making it easy for anyone to interact with. It uses clear and concise language to explain complex concepts, ensuring accessibility for a wide range of users.
- **Code-Based Implementation:** The chatbot is built using a robust code implementation, leveraging the Google Generative AI library. This enables the chatbot to generate responses dynamically based on user input.
- **Google Generative AI Library:** Implementation Details: The code snippet demonstrates the use of the @google/generative-ai library, which provides access to Google's powerful language models.
- **Prompt Extraction:** The code extracts the user's prompt from the request body, which will be used to generate a response.
- **Model Selection:** The code selects the gemini-1.5-flash model for generating content. This model is likely chosen for its advanced capabilities in understanding and responding to human language.
- **Content Generation:** The generateContent method is used to generate a response to the user's prompt using the selected model.

6 Conclusion

The Centralised De-addiction and Counselling Data Management Web Application is a comprehensive and well-structured platform aimed at centralizing de-addiction and counseling data management. It bridges the gap between patients, counselors, and rehabilitation centers, creating a streamlined system to support recovery journeys. By integrating modern technologies and user-focused features, the project addresses the critical need for accessible and efficient resources in addiction recovery. The platform's primary focus on data management, user engagement, and secure communication ensures that it can serve as a reliable tool for both patients and healthcare providers.

One of the most significant achievements of the project is the successful implementation of a robust authentication system, ensuring secure access for users and administrators. The role-based access control not only enhances security but also aligns with the ethical handling of sensitive information. Features like user registration, secure login using JWT, and HTTPS encryption highlight the emphasis on safeguarding user data and privacy, a critical aspect in today's digital era.

The application's user-friendly interface ensures accessibility for a wide audience, including those who may not be tech-savvy. Its responsive design, seamless navigation, and visually appealing layout create a welcoming environment for users to explore the services provided. Features such as search and filter options, chatbot integration, and real-time feedback collection empower users to find relevant resources and interact with the platform effectively. These elements enhance the overall usability of the application, making it a practical solution for real-world scenarios.

From a technical perspective, the backend infrastructure powered by Node.js, Express, and MongoDB ensures scalability and reliability. The use of modern frameworks, API testing, and deployment tools like Render and Vercel contributes to the application's performance and robustness. The modular and maintainable codebase facilitates future updates and extensions, ensuring that the platform can evolve with changing user needs and technological advancements.

The inclusion of features like event and patient data management further enhances the practicality of the platform. It enables administrators to handle data efficiently while giving users access to critical information. By integrating third-party tools like Postman for API testing and Gemini-powered AI for chatbot functionality, the application demonstrates a forward-thinking approach to technology adoption, ensuring reliability and efficiency.

In conclusion, the DeAddict project stands as a testament to the effective combination of technology, user-centric design, and healthcare service delivery. It not only achieves its goal of centralizing de-addiction and counseling data but also

lays the foundation for further innovation in this domain. With its scalability, security, and usability features, the platform holds immense potential to positively impact the lives of individuals seeking recovery and the organizations that support them. The project serves as a meaningful contribution to the digital healthcare landscape, addressing a critical societal need.

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