The Design of an AI Integrated Service Platform for Infants and Children Care

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***Abstract*—Family structures and changes in the social environment have presented parents with numerous challenges. Therefore, the study designs an integrated service platform that combines clinics, pharmacies, and user-end information and data. Caregivers can record infants and young children's daily care and growth conditions on the platform, which then uses AI technology to analyze the children's growth status and preferences, offering product recommendations. When infants exhibit minor symptoms, parents can seek suggestions from professional pharmacists who will record the assistance details and symptoms on the platform, sharing information to expedite doctor consultations to minimize the risk of reinfection. Besides, the clinics provide parenting columns and real-time online customer service on the platform, enabling parents to seek professional advice immediately when facing childcare issues.**

***Index Terms*—Application software, integrated service platform, artificial intelligence, information sharing, infant and young child care**

I. Introduction

Parents need help distinguishing reliable information before their child is born, as online information is easy to understand but hard to verify [1]. The variety of products and marketing strategies complicates the selection of suitable items for their children, especially when choosing formula [2]. Additionally, a lack of experience and knowledge about childcare can cause anxiety for parents when sudden health issues in infants. Digital media, recognized as an essential tool in modern society [3], supports a new service platform introduced in this study. This platform facilitates communication between families, pharmacies, and clinics using AI, which is touted for its potential to drive business value and enhance healthcare [4]. This study aims to reduce the parenting burden, boost confidence, and ensure optimal health care for children during their growth.

II. Design Concept

The integrated service platform aims to offer parents a more convenient childcare experience through three primary services based on information integration between families, pharmacies, and clinics. The service scenarios include daily care management, procedures for handling illnesses, and information families seek during everyday care challenges—service framework as shown in Fig. 1.

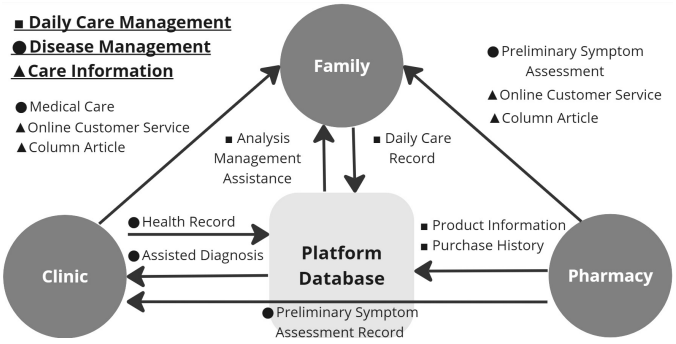

Fig. 1. Service Framework

A. Family

This platform helps parents track their children's growth by recording data like height and weight. It then converts this data into growth charts based on World Health Organization standards for children aged 0-2 years, aiding parents in monitoring their child's development. Parents can also seek immediate advice on childcare issues from online customer service provided by pharmacies and doctors, receiving professional recommendations when needed.

B. Pharmacy

Based on families' daily records, the AI analyzes and recommends products suitable for their developmental stages, including formulas for various health conditions [2]. It also assists with inventory management and sends purchase reminders to help parents keep track of baby product supplies.

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For minor symptoms like a cold, especially during epidemics that increase respiratory infection risks [5], parents can consult with the pharmacy before seeking immediate medical care, reducing infection exposure. If necessary, they can book appointments directly through the platform or authorize the pharmacy to schedule clinic visits, minimizing wait times.

C. Clinic

Doctors can quickly review infant and child health AI recommendations from the pharmacy and daily care records on the platform before consultations, speeding up the consultation process and reducing the risk of reinfection. To reduce information overload and ensure reliability, the platform collaborates with trusted pediatricians to provide a parenting information column covering prenatal care, infant growth stages, allergy prevention, feeding tips, and intestinal health. This helps parents access accurate information easily while caring for their children.

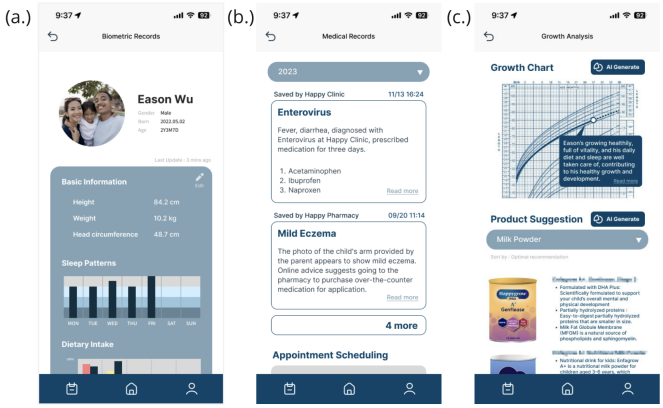

Fig. 2. User Interface(a.)Daily Care Record(b.)Health Record(c.)AI Analysis

III. PROTOTYPE

The platform's user interfaces facilitate daily care through a mobile app for families, while pharmacies and clinics use a web interface compatible with their work equipment. The user interface for the family platform is shown in Fig. 2. The integrated service process of the platform includes data management and utilizing AI to analyze the data and generate suggestions. Taking the scenarios of daily care and disease management as examples in Fig. 3, families share their children's care records on the app during regular times Fig. 2(a.). The platform obtains data from the family, clinic, and pharmacy. It uses AI to analyze the data and generate suggestions for medical diagnosis assistance, analysis of the child's growth status Fig. 2(c.), medication reminders, etc. The relationship between data management and AI-generated data for the above two scenarios is illustrated in Fig. 4.

CONCLUSION AND FUTURE WORKS

We proposed a service platform integrating clinics, pharmacies, and user data to improve infant and young child

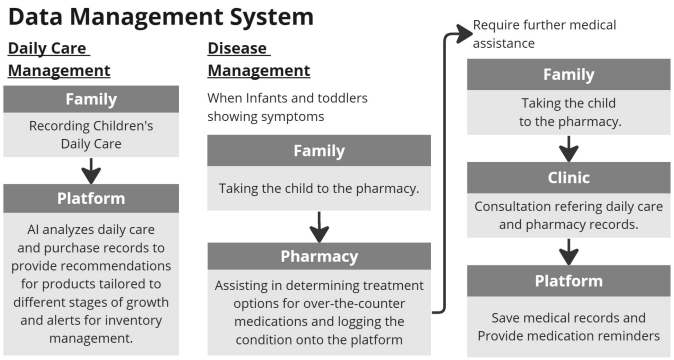

Fig. 3. Data Management System

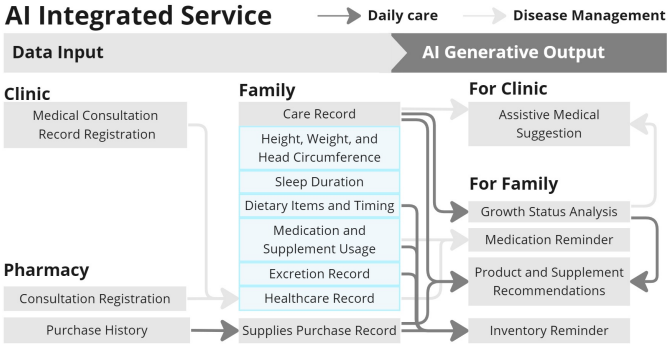

Fig. 4. AI Integrated Service

care management. Our platform demonstrates services that offer health analysis and personalized product recommendations through AI analysis, a disease management process that reduces infection risks, and support for families to access professional information. Future research will evaluate the platform's usability, efficiency, and user satisfaction through surveys and questionnaires, further optimizing its functionality to meet better the care needs of families with infants and young children.

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