

Research Article

Personalized Nutrition Guidance for Women

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A B S T R A C T

The scarcity of applications pertaining to women's nutritional health highlights the dearth of digital tools created with women's unique health needs in mind. Applications for health and wellness are growing in popularity, but not many of them address the nutritional needs, general well-being, or reproductive health of women. This disparity is particularly notable in light of the range of physiological changes that women experience during their lives, including menstruation, pregnancy, and menopause. It is unclear how common smartphone apps are for encouraging lifestyle changes in this demographic, despite the growing interest in mobile health interventions. Rapid technological advancements have made it easier to employ cell phones for study and practice in health promotion. Large smartphone platforms offer a wide variety of nutrition and food-related programs (apps), but very few of these have been tested in research to determine how effectively they improve health. In order to enable women to take control of their health and promote a holistic approach to wellbeing, the abstract highlights how women's nutritional health apps require more attention and development.

Keywords: women's Health, Personalized Nutrition, Tailored Meals, Menstruation, Custom, Dietary, Meal

Introduction

A woman's diet changes significantly at each period of her life, making it a dynamic and important component of general health and well-being. Understanding the importance of specific eating practices during these stages is essential to supporting a woman's lifelong quest for hormonal balance, optimal health, and strength. In this introduction, we emphasize the importance of women's nutrition, focusing on how women can have fulfilling, healthy lives with dietary choices that are specifically customized

to them.³ A woman who is well-nourished possesses the mental and physical strength to work hard and make a significant contribution to her family's and society's issues. And a well-nourished woman is more probable to have well-nourished babies and youthful children who join her on a route to good health and fortune.² But this isn't the reality that many women face; women all across the world are affected by obesity, micronutrient deficiencies, and the additional hazards of undernutrition (light and short height). It becomes crucial to maintain hormonal balance and control menstrual symptoms through proper nutrition.

Adolescence is a critical period for physical growth, requiring a healthy diet for maintaining health and controlling menstrual symptoms, especially during hormonal shifts. During pregnancy, optimal dietary needs for the developing fetus and expectant mother are crucial for growth and health.¹ Menopause symptoms like hot flashes and decreased bone density can be managed with a diet. For women with PCOS, a healthy diet, including low-glycemic options and weight management, is essential. As women age, preserving muscle mass, mental acuity, and bone density is even more important. Women's unique physiological and hormonal changes necessitate tailored nutritional plans at each stage of life. Empowering women with the wisdom to make informed choices is crucial for their long-term fitness and well-being, especially in a society that prioritizes health.

Limitation of Existing Systems

Lack of regulation in a subject that is commercially dominated is a glaring disadvantage of the healthcare application market, making it challenging for consumers to evaluate the accuracy of the information being provided. When given the option, consumers and health professionals both say they would rather utilize pregnancy applications that are reputable and pertinent to their local healthcare environment. Research suggests that more institutional and health professional involvement in app creation is necessary, as is education about and support for women's use of these tools.

Existing healthcare apps that revolve around nutrition, personalization, and health management for women may have several limitations. It's important to acknowledge that the landscape of healthcare apps is continually evolving, and advancements are being made to address these limitations.

Some apps for women's health may oversimplify women's health, assuming a one-size-fits-all approach. This can limit the app's effectiveness. Additionally, many apps focus on nutrition without integrating comprehensive health data, leading to incomplete health management.⁵ The reliability of user-input data is crucial for personalized nutrition advice. Insufficient personalization may also limit the app's ability to adapt to life changes. Lack of professional oversight may limit the app's ability to provide comprehensive care. User engagement challenges can limit the app's ability to provide ongoing support. Cultural sensitivity may be limited, and mental health integration may be overlooked. Privacy and security concerns arise, as apps dealing with sensitive health data should prioritize robust measures. Evidence-based content may not always align with the latest health information. Limited accessibility may be a challenge for some women, especially those in underserved populations.¹¹ Lack of interest in health applications may also be a concern.¹² Integrating apps into users' usual smartphone use patterns can increase their usage.^{8,9}

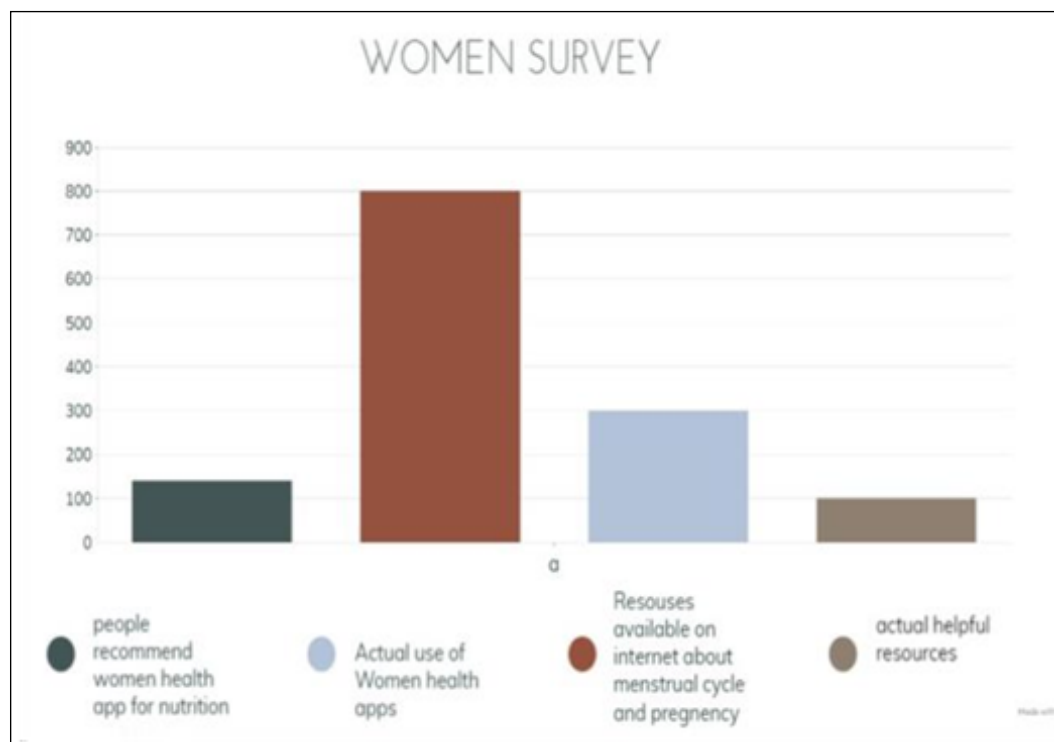


Figure I.Women Survey

Proposed System

The proposed system can provide personalized, reliable, and evidence-based nutrition that meets the unique requirements of women's health. It provides a variety of functionalities, like meal tracking, a nutrition database, progress tracking, and community or social services, to name some. Users create accounts, providing essential information like age, life stage, dietary preferences, and health goals based on which the app provides dietary recommendations, meal plans, and recipe suggestions tailored to individual needs. The app provides goal-setting features for weight management or any dietary targets with appropriate meal portions. Its community feature helps in connecting and sharing responses or engaging with support groups. This helps empower.

Methodology

We proudly introduce "FemHealth360," an innovative app designed to give substantiated and grounded nutrition guidance for women during crucial life stages, including period, gestation, and Polycystic Ovary Pattern (PCOS).

Step 1: User Registration:

Create an account with basic information: name, email, and password. Optional: Add age, weight, height, and activity level for personalized recommendations.

Step 2: Data Collection:

Complete a questionnaire for health goals, dietary preferences, and conditions.

Step 3: Analysis and Personalized Recommendations:

Suggest specific foods or supplements to meet the user's nutrient requirements. The app analyzes logged meals to provide real-time nutrient breakdowns, including calories, macronutrients (carbohydrates, proteins, and fats), vitamins, and minerals.

Step 4: Progress Tracking:

Users can set specific nutritional goals, such as weight loss, muscle gain, or improved energy levels. Users can track their weight and body measurements over time.

Step 5: Real-Time Guidance and Updates:

Provide assistance by having dietitians and nutritionists engage with members of the public by responding to queries from users and offering professional advice.

Step 6: Community Support and Review:

It can also offer support through community forums. Encourages user engagement by organizing challenges related to nutrition and wellness.

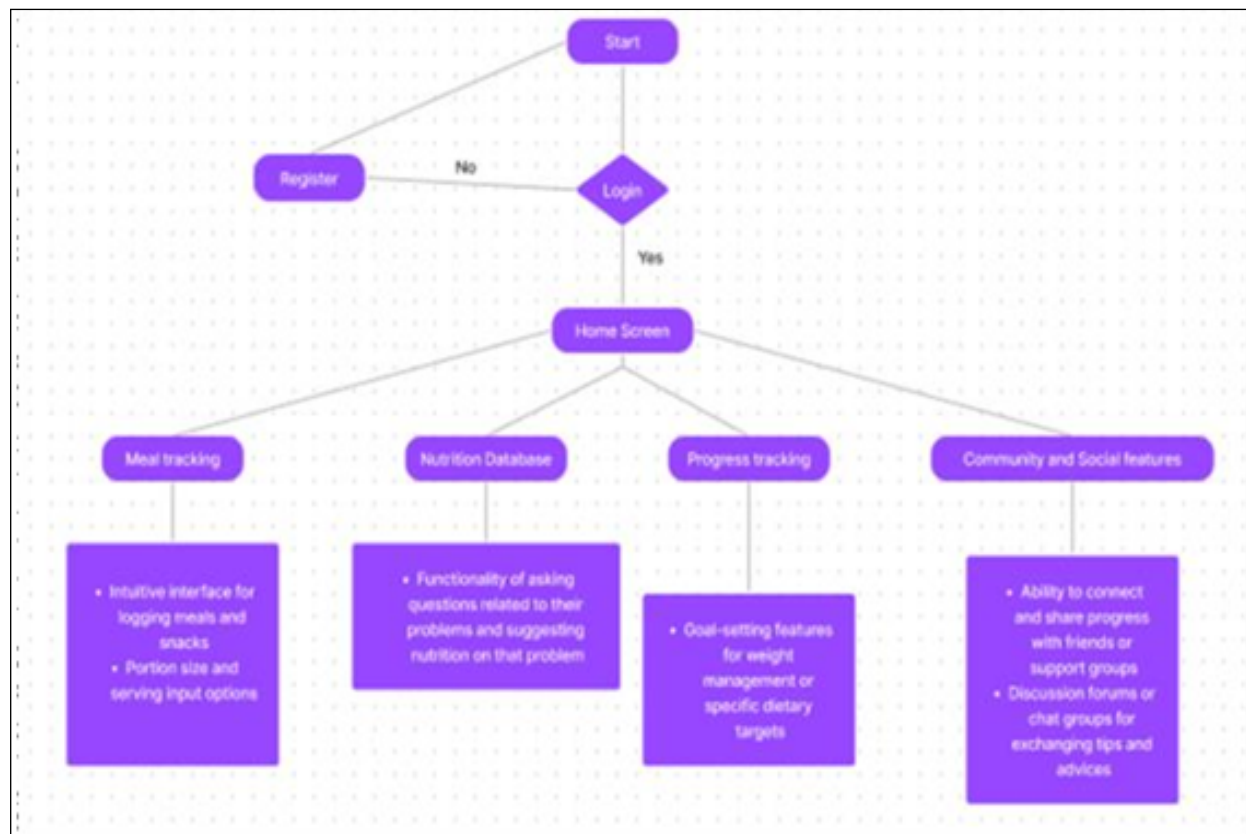


Figure 2. Discussing in detail all the modules of our proposed app

Meal Tracking

Food Logging: Users can log their daily meals, including breakfast, lunch, dinner, and snacks, within the app. They can input the type of food, portion sizes, and preparation methods.

Nutrient Analysis: Utilize a nutrition database to provide real-time nutrient analysis of logged meals, showing users the breakdown of macronutrients (carbohydrates, proteins, and fats), vitamins, minerals, and other relevant nutritional information.

Progress Tracking

Weight and Measurement Tracking: Users can track changes in their weight, body measurements (e.g., waist, hip circumference), and body mass index (BMI) over time to monitor their progress.

Nutritional Goals: Set and track personalized nutritional goals, such as daily calorie intake, protein targets, or specific nutrient goals (e.g., iron, calcium), based on individual health objectives.

Meal Plan Compliance: Evaluate how well users are adhering to their personalized meal plans and provide feedback on areas for improvement.

Pro-Nutrition Database

Allergens and Dietary Restrictions: Include filtering options to help users with dietary restrictions or allergies find suitable foods and recipes.

Custom Food Entries: Allow users to add custom food items and recipes to the database for accurate meal tracking.

Community Services

User Forums: Create user forums and discussion boards where app users can connect, share experiences, ask questions, and provide support to one another.

Expert Q&A: Host regular Q&A sessions with nutritionists, dietitians, and health experts, allowing users to ask questions and receive expert guidance. **Progress Sharing:** Users can choose to share their progress, achievements, and meal ideas with the community, inspiring and motivating others.

Our proposed app can give an in-depth and user-centric approach to perfecting women's nutrition by laying these features to trial. These include better tracking, assessment of progress, access to a voluminous nutrition database, and a community that supports and empowers women as they head toward a healthier and happier life.



Figure 3. UI/UX

Future Scope

By including genetic information and biomarkers, the FemHealth360 App can stay at the forefront of women's nutritional wellbeing by providing even more exact dietary recommendations tailored to an individual's specific genetic composition and health state. Acknowledge the complex relationship between physical and mental wellness. Include assets and tools for managing anxiety, depression, and other emotional wellness issues that can influence dietary decisions. Extending choices for languages and offering strong accessibility features will assist the app in being more diverse and easier to use. With the growing use of AI, we may add AI-powered chatbots that can deliver rapid solutions to user queries while strengthening the overall satisfaction of users.

With all of these improvements and features, it will aid in providing women with the expertise and abilities they need to make this choice, which is critical for their future well-being and health.

Conclusion

The lack of dedicated apps for women's nutrition during menstruation, pregnancy, and Polycystic Ovary Syndrome (PCOS) can be attributed to a lack of emphasis on women's health in the app development industry and the complexity of developing accurate nutrition guidance. Personalized nutrition software can help women optimize their nutrition, support their well-being, and achieve long-term health goals. Collaboration between analysts, health experts, and maternity associations is needed to ensure comprehensive, accurate, and evidence-based nutrition content.

This approach would permit ladies to use applications as a solid sustenance asset to go with very educated dietary choices to improve maternal and fetal wellbeing. Integrating proof from conduct change mediations could genuinely deserve further examination while creating applications. At last, our work features the basic requirement for more guidelines and oversight of our proposed app. This study suggests that health experts, maternity associations, and app engineers should collaborate to ensure comprehensive, accurate, and evidence-based nutrition content for the intended population, enabling women to make informed dietary choices for maternal and fetal health.

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