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DESIGN AND DEVELOPMENT OF WATCH MY CALORIE: A SMART MOBILE APPLICATION FOR PERSONALISED NUTRITIONAL INSIGHTS

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ABSTRACT

While several calorie-tracking mobile applications already exist, many fall short of user expectations, especially in localisation, personalisation, and user interaction. This highlights the need for a solution that balances practical usefulness with ease of use. This study aims to design and develop a mobile application to help users monitor their daily calorie intake while promoting a healthy, balanced lifestyle. This application includes personalised features such as meal tracking, BMI calculation, nutritional insights, and healthy dietary recommendations. Watch My Calorie aims to provide an intuitive, visually engaging, user-friendly interface that makes it easy to track calorie intake and analyse dietary habits, quickly identifying relevant nutritional patterns. This study details the application's design, development, and assessment process, using Flutter and Firebase as the primary technologies. The application also provides tailored health recommendations based on activity levels and health conditions. The findings showed high satisfaction with ease of use and feature relevance, confirming alignment with user expectations. The acceptance dimension scored an average of 5.79, indicating strong user trust and satisfaction. Overall, the findings suggest that Watch My Calorie meets user expectations and provides a practical solution for self-monitoring calorie intake. The high usability and satisfaction scores suggest that a culturally relevant, user-centred application can significantly support users in managing their nutrition; this strengthens previous findings that effective calorie tracking tools positively impact eating behaviours. This study contributes to the growing field of mobile health (mHealth) applications by integrating personalised mobile nutrition tracking into everyday life to promote long-term health awareness and behavioural change.

Keywords: calorie tracker, mobile health application, nutritional insight, personalised healthy lifestyle, tailored health recommendation.

INTRODUCTION

Poor dietary habits and sedentary lifestyles have resulted in a rise in health issues, especially obesity and non-communicable diseases (NCDs), among diverse groups. As reported by the World Health Organisation (WHO), the incidence of overweight and obesity is still increasing in Southeast Asia, particularly in Malaysia. A promising approach is mobile health (mHealth) applications, which enable users to track their nutrition, access health information, and adjust their eating habits.

However, studies show that many commercial applications like Google Fit and MyFitnessPal often fall short of local user needs because they lack cultural adaptation, feature complex user interfaces, or provide limited personalised feedback (Keskin & Köse, 2023; Stapelfeldt et al., 2024). Rahim et al. (2025) investigated deploying a mobile calorie-tracking application for local consumers in Malaysia, highlighting the need for localised food databases, Bahasa Melayu support, and culturally relevant recommendations.

To address these gaps, we developed Watch My Calorie as a user-friendly, regional solution for Malaysian consumers, especially young adults, designed to overcome these limitations. Built with Flutter and Firebase, the application offers core features such as meal logging, personalised health suggestions, calorie analysis, and BMI-based health feedback. Emphasising simplicity, clarity, and accessibility, the application helps users make informed nutritional decisions while keeping the interface modern and easy to navigate.

Beyond standard mobile health practices, Watch My Calorie focuses on delivering visual, personalised feedback to encourage user engagement. The development process used an iterative, user-focused method, enabling early evaluation and improvements grounded in real user interactions. A field test assessed the application's performance in real-life situations, collected user input, and identified areas for future improvement.

This study focuses on designing and developing a mobile application that helps users track daily calorie intake and maintain a balanced, healthy lifestyle. The rest of this article is organised as follows. The next section reviews related literature, and the methodology section then outlines the V-Model development approach and the health calculations used. The system implementation section presents the application's interfaces. The results and discussion section reports the user acceptance testing findings and their implications, and the final section concludes the study with directions for future work.

LITERATURE REVIEW

Many digital platforms have appeared to tackle food monitoring and calorie tracking. Abeltino et al. (2025) presented an extensive examination of diet-tracking applications and highlighted the importance of personalisation and data-driven analytics. These solutions improve convenience and dietary awareness, especially when combined with features such as data visualisation and automated feedback.

Calorie-tracking applications have been shown to improve eating habits, particularly when they include data visualisation and feedback loops (Standen & Rothman, 2023). Similarly, Vlahu-Gjorgievska et al. (2023) found that the most successful mHealth applications for young people had engaging user interfaces and feedback systems aligned with personal objectives. For example, Gayatri et al. (2024)

created a calorie-monitoring application that emphasises identifying eating habits but noted difficulties maintaining steady user engagement because of complex interfaces.

Rahim et al. (2025), who assessed a calorie application with a Malaysian focus, echoed this problem by emphasising the need for culturally appropriate food items, support for Bahasa Melayu, and health-based customisations, including BMI calculators and health-condition filtering. Keskin and Köse (2023) found that behavioural changes are more noticeable when the instruments are straightforward, user-friendly and culturally appropriate. Lo et al. (2024) echoed this finding by stressing that public health technologies must integrate culturally relevant nutritional data and simplified user workflows to achieve widespread adoption.

Despite evidence that personalisation and culturally adapted content improve engagement, existing calorie-tracking apps lack Malaysian food coverage, *Bahasa Melayu* support and validated local usability studies; this gap motivates the development and evaluation of a localised, user-centred calorie tracker that emphasises cultural adaptation, personalisation, and simple interfaces for personalised nutritional insights among local users.

Today, dozens of calorie tracking apps are available, each with strengths and weaknesses. Table 1 compares ‘Noom’, ‘MyFitnessPal’, and ‘Lose It!’ as existing calorie-tracking mobile apps. The data show that no single application has more strengths and fewer weaknesses. Even the best calorie-tracking application has potential weaknesses.

Table 1
Comparisons Between ‘Noom’, ‘MyFitnessPal’ and ‘Lose It!’

Feature	Noom	MyFitnessPal	Lose It!
Objective	Focuses on the psychology of weight loss with calorie counting.	Focuses on calorie counting and detailed food tracking.	Offers simple, user-friendly calorie counting.
Pros and Features	Provides a unique approach, promotes healthy habits, and offers personalised coaching.	Utilises an extensive food database, macro tracking, and a free tier with basic features.	Provides a clean interface, quick feedback, and benefits those who do not prefer extensive features.
Localisation and Personalisation	More expensive than other apps, uses a colour-coded food system that may not work for everyone. Does not offer localised food databases, language support, or culturally relevant recommendations.	More complex, can be overwhelming for beginners and lacks the motivational aspects of other apps. It doesn't offer localised food databases, language support, or culturally relevant recommendations.	Limited features may not offer enough long-term support. It lacks localised food databases, language support, and culturally relevant recommendations.
Usability	Benefits those seeking psychological support and a structured approach.	Suits data-driven trackers and those who prefer detailed food tracking.	Suits beginners and those who prefer a simple, user-friendly app.

While mobile apps like ‘Noom’, ‘MyFitnessPal’, and ‘Lose It!’ have made calorie tracking more accessible, they still need to create a user experience that engages and serves different users. Current calorie tracking apps focus primarily on recording and visualising data, but they often lack in-depth, personalised analysis of how a user’s eating habits affect their long-term health. This gap limits users’ ability to make sustainable dietary changes that align with their specific health goals.

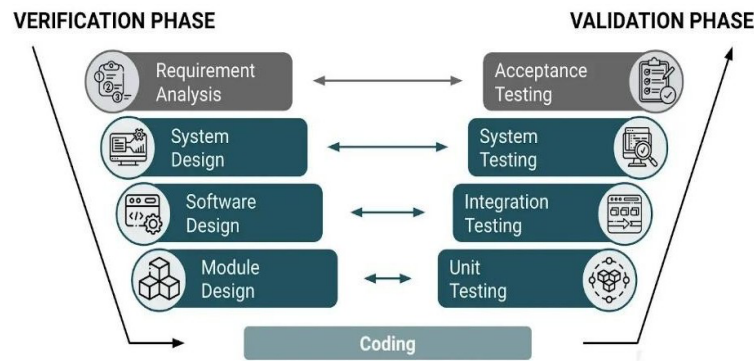
One key issue is the complexity and time required to record meals and analyse calorie habits effectively. Many users find manually entering each meal tedious, which reduces engagement over time. Additionally, these applications often present calorie data in a format that non-expert users find hard to interpret, leaving them unsure how to adjust their diet to reach specific health goals, such as weight loss, muscle gain, or improved cardiovascular health. This matters because without a clear understanding of eating habits and guidance on how to adjust them, users may struggle to achieve lasting health improvements. People with limited nutrition knowledge or busy lifestyles are especially affected, as they may lack the time or expertise to interpret calorie data effectively. As a result, many users abandon the app or make little progress toward their health goals, despite regular monitoring. The ideal solution is an application that simplifies meal logging, provides intuitive, insightful calorie-trend analysis, and offers personalised dietary recommendations based on each user's specific goals and health conditions. This would help users make more informed dietary decisions and support a long-term approach to health management that goes beyond calorie counting.

The Watch My Calorie mobile application stands out from other popular apps by offering a simple, user-friendly experience that emphasises quick, easy meal logging, real-time calorie feedback, and personalised health information. Unlike other apps that can feel overwhelming with extra features and upsells, Watch My Calorie stays simple and effective, perfect for users who want to track calories without unnecessary distractions. It also prioritises helpful diet feedback by providing localised, personalised health insights based on your eating habits, making it easier to understand and achieve your health goals. It also integrates a personal notes feature so users can track favourite foods, dietary preferences, and recommendations in one place, making it feel more localised, personalised, and intuitive.

METHODOLOGY

The Watch My Calorie mobile app was developed using the V-Model methodology, a software development technique that emphasises parallel interaction between development and testing phases (Khan, 2023). It is often used in projects that require high accuracy and reliability, where precision and thorough documentation are paramount (Pham, 2024). By developing and testing according to the V-Model, we benefit from early requirement validation, detailed built-in at each phase, and defect prevention, as the model provides traceability between development and testing (Liu et al., 2025). Figure 1 shows the two phases of verification and validation. The system architecture, workflow, data schemas, API interactions with Firebase, implementation and outputs are described in Figure 2.

Figure 1
V-Model



Verification Phases

Phase 1: Requirement Analysis

The team defined the application's main features, such as meal tracking, BMI calculation, calorie consumption, and personalised dietary recommendations based on user profiles and health conditions, based on user needs, a literature review, and market analysis.

Phase 2: System Design

The team planned the application's user experience and architecture. The team chose Firebase for backend services and developed UI prototypes and wireframes to define navigation flow, chart visuals, and BMI calculation logic. The team kept the visual interface simple to improve usability and match young users' expectations (Vlahu-Gjorgievska et al., 2023).

Phase 3: Software Design

Each feature was described in technical detail, including how modules such as the BMI calculator, meal logger, and recommendation engine would interact. The aim was to ensure a smooth data flow and a seamless user experience, supporting personalised health outputs (Salinari et al., 2023).

Phase 4: Module Design

The four main functional applications, user registration, meal logging, personalised health recommendations, and calorie analysis, were designed to ensure data consistency, reusability, and smooth information flow.

Phase 5: Implementation

Using Flutter and Dart, the team coded Watch My Calorie. The team used the BMI formula (Zierle-Ghosh & Jan, 2023) to classify users' weight categories, while Firebase and charting libraries enabled real-time updates and charts. These visual aids enhanced user engagement and awareness (Standen & Rothman, 2023). The methodology and technologies were chosen based on the study's main purpose

and requirements, including both functionality and validation phases. The components are structured to provide a simple, user-friendly, and intuitive user experience.

Food Data Curation, Normalisation, Quality Checking and Validation Phases

Complementing usability metrics, we performed technical validations, including unit test coverage, accuracy checks for BMI/BMR/TDEE calculations, and food-database mapping logic. We curated and standardised food items, portion sizes, and calorie values. We assigned each food item a standardised name, food category, reference serving size, and corresponding calorie value based on an established nutritional reference database. We normalised food names to reduce duplicate entries caused by differences in spelling, capitalisation, abbreviations, or commonly used alternative names. Portion sizes were standardised using measurable units such as grams, millilitres or servings. Nutritional values were expressed using a common reference unit, such as calories per 100 g, to ensure consistent calculations across portion sizes where possible. The team then calculated estimated calorie intake based on the quantity the user selected. Quality checks identified duplicate records, missing nutritional values, and inconsistent measurement units. The team also compared a sample of the curated food records against the original nutritional reference to verify the accuracy of the food and calorie mapping. These procedures helped ensure that the food database was consistent and traceable for nutrition recommendations, calorie analysis and related modules.

Phase 6: Unit Testing

Each module was tested individually to confirm accuracy in data input and processing. This step ensured critical features like the BMI calculator and food entry system worked correctly before full application integration.

Phase 7: Integration Testing

Modules were then combined and tested as a complete system. This phase confirmed that meal inputs affected calorie graphs and that BMI values accurately influenced the application's health suggestions, aligning with the application's goal of real-time, personalised feedback (Abeltino et al., 2025).

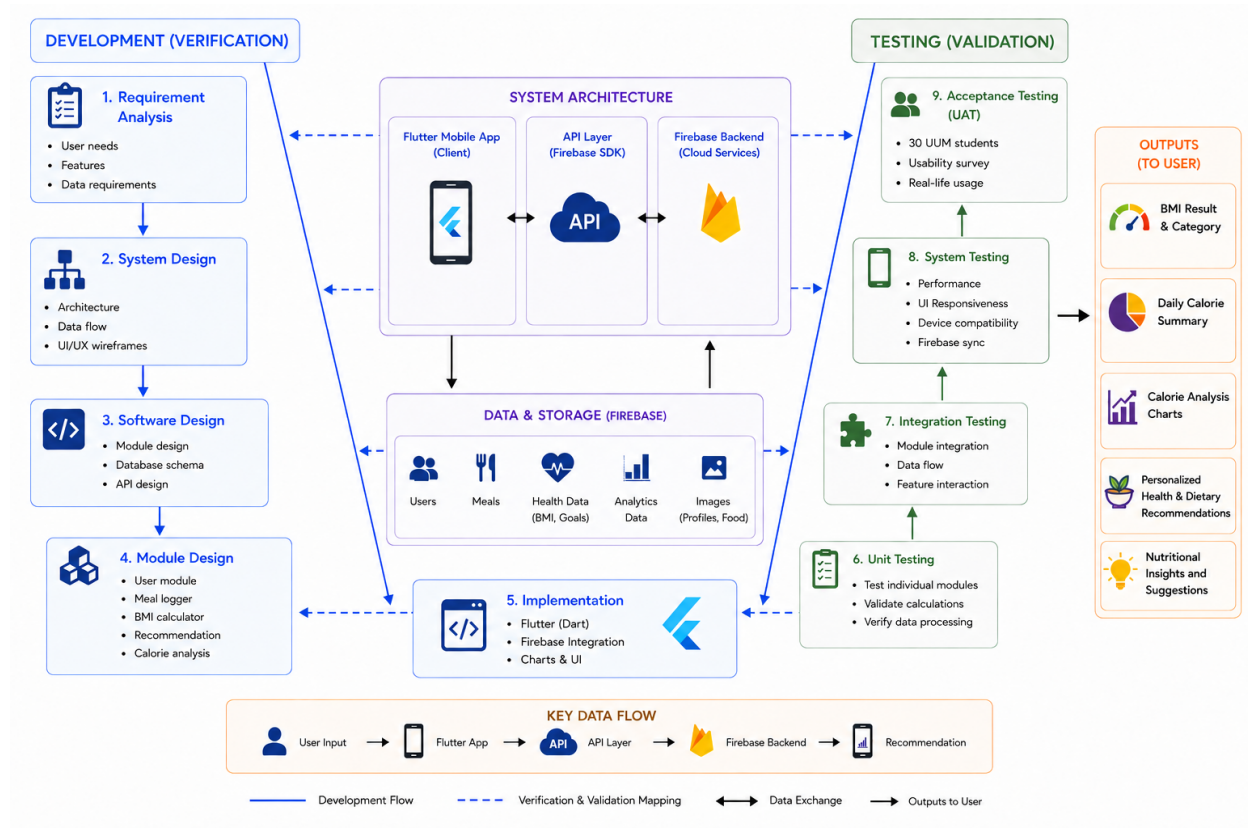
Phase 8: System Testing

This phase involved deploying the app on Android devices and testing it end-to-end to evaluate overall performance, UI responsiveness, Firebase synchronisation, and compatibility across different device types and screen sizes.

Phase 9: Acceptance Testing

A total of 30 respondents participated in user acceptance testing (UAT). They used the mobile application in real-life situations and answered a corresponding usability survey. The results showed high satisfaction with ease of use and feature relevance, confirming alignment with user expectations (Keskin & Köse, 2023; Rahim et al., 2025).

Figure 2
System Architecture and Workflow



Formula and Calculations

One of the most-used features in diet-monitoring apps is the Body Mass Index (BMI) calculator, which gives users a general assessment of their health based on weight and height. According to Zierle-Ghosh and Jan (2023), BMI is determined by applying the formula:

$$BMI = Weight (kg) / [Height (m)]^2 \quad (1)$$

This calculation helps users identify whether they fall into categories such as underweight, normal weight, overweight, or obese, according to World Health Organisation (WHO) standards. For instance, an individual weighing 60 kg and measuring 1.65 meters in height would have a BMI of:

$$BMI = 60 / (1.65)^2 = 60 / 2.7225 \approx 22.04 \quad (2)$$

A BMI of 22.04 is classified as 'normal weight' based on WHO standards. The app calculates this BMI during profile setup and uses it to determine whether the user falls into the underweight, normal, overweight, or obese categories. This value directly influences the personalised dietary advice and health recommendations the application provides.

In addition to BMI, many health apps estimate a user's daily energy requirement using the Basal Metabolic Rate (BMR), calculated using the Harris-Benedict equation (Chatterjee et al., 2021). The formula differs slightly for males and females:

For males:

$$BMR = 88.362 + (13.397 \times \text{weight in kg}) + (4.799 \times \text{height in cm}) - (5.677 \times \text{age in years}) \quad (3)$$

For females:

$$BMR = 447.593 + (9.247 \times \text{weight in kg}) + (3.098 \times \text{height in cm}) - (4.330 \times \text{age in years}) \quad (4)$$

Once calculated, the BMR is multiplied by an activity factor (e.g., sedentary, lightly active, moderately active) to estimate the user's Total Daily Energy Expenditure (TDEE). In Watch My Calorie, this TDEE serves as a benchmark to guide users in meeting daily calorie intake goals and to recommend appropriate meal quantities. The team implemented this during the application's module design and validated it through field testing.

Another key health metric included in the app is daily water intake, which helps users track hydration. The water-intake calculation and recommended target were validated against an established reference. According to widely accepted guidelines (*Daily Water Intake Calculator*, n.d.), daily water needs are estimated by multiplying a person's weight by a hydration factor, typically 35 ml/kg for males and 30 ml/kg for females, with an adjustment for activity levels. The formula used is:

$$\text{Daily Water Intake (ml)} = \text{Weight (kg)} \times \text{Base Water (ml/kg)} \times \text{Activity Multiplier} \quad (5)$$

Watch My Calorie uses this formula in the health recommendation module to provide personalised hydration tips. For example, a moderately active female weighing 60 kg would be recommended about 1.8 litres (60×30 ml) of water daily, adjusted for activity level.

We validated the BMI, BMR, TDEE, and calorie calculation modules against established reference standards. We compared BMI results with the standard BMI equation and WHO classification criteria. BMR and TDEE outputs were verified using the Harris-Benedict equation and established physical-activity factors. We compared calorie values for food items with values from an authoritative food-composition database. For each test case, we compared the application's output with the reference value and recorded the percentage differences. This validation ensured the implemented calculation algorithms produced consistent, accurate results.

SYSTEM IMPLEMENTATION

The Watch My Calorie prototype shows the mobile application's visual and interactive layout before full implementation. It serves as a blueprint showing how users will interact with the application's features and navigate its main functions. The prototype was built using Flutter UI components and is designed to provide a simple, user-friendly experience, especially for first-time users and young adults.

Each screen was designed for clarity, accessibility, and functionality, ensuring a smooth user flow from registration to daily calorie tracking and personalised feedback.

Sign Up Page Display

This screen collects personal information from the user to create a profile. Users input their name, email, gender, age, weight, and height. There's also an option to declare any existing health issues, such as diabetes or high blood pressure. This information is used to calculate BMI and tailor health recommendations.

Figure 3

Welcome and Sign-Up Pages

19:52 5G A

← Sign Up

Join WatchMyCalorie and start your journey!

Personal Information

Full Name
Athirah

Age
23

Email
athirahzayuky@gmail.com

Gender

Male Female

Weight (kg)
58

Height (cm)
165

Activity Level
Lightly Active

Light exercise or sports 1–3 days/week

Do you have any health issue?

I have health issue

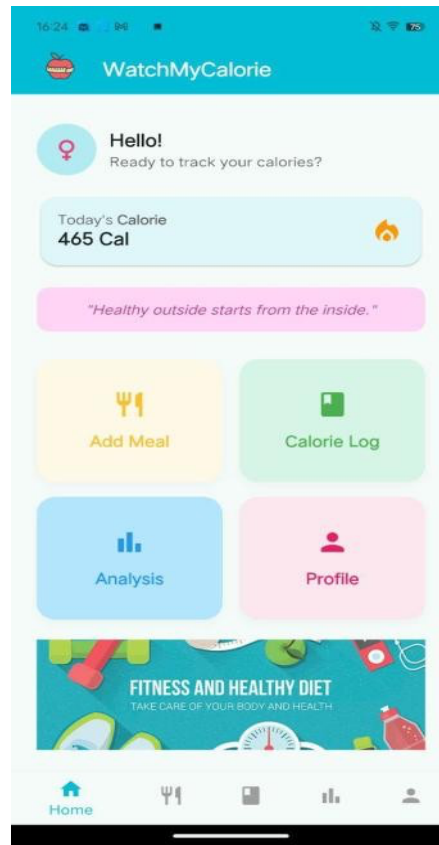
Health Condition
Diabetes

A chronic condition that affects how your body turns food into energy.

Home Page Display

This is the main dashboard that welcomes users after logging in. It shows total calories consumed for the day and provides quick access to core features: Add Meal, Calorie Log, Analysis, and Profile. It also includes motivational prompts or health tips.

Figure 4
Home Page



Add Meal Page Display

Users can input their meals by entering the date, meal name, category (breakfast, lunch, dinner, etc.), and calories. Below the form, the application provides personalised suggestions or health alerts based on the user's BMI and meal input. This supports better decision-making at the point of entry.

Figure 5
Add Meal Page

16:25 100% 5G

Add Meal

Monday, June 16
Tap to change date

*Suggestion: You have a normal weight.
Keep a balanced diet with a variety of foods.
Include iron-rich foods in your meals.*

Select Food
Nasi Ayam (600 kcal)

Calories
600

Select Meal Category
Breakfast

Save Meal

The data provided to you by this app are retrieved from the health.family.my database. No guarantees can be made for the accuracy, completeness, or reliability of the information provided. The data are provided "as is" and the originating source for the data is not liable for any damages arising out of the use of the data.

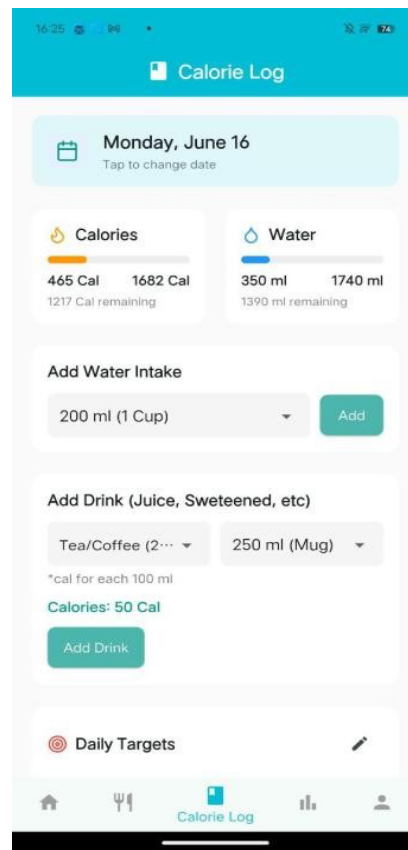
[More information at health.family.my](#)

Add Meal

Calorie Log Page Display

This screen shows a list of meals that have been logged for the day. Each entry includes the meal name, calories, and portion details. Users can also add water intake in millilitres. The page helps users track their daily intake and hydration, with a button to add new meals or drinks.

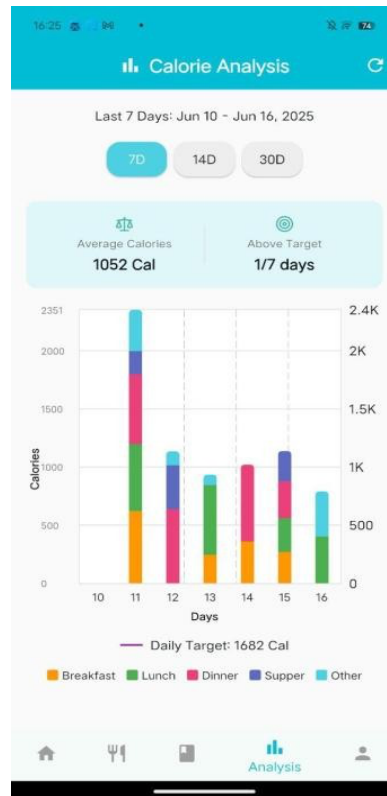
Figure 6
Calorie Log Page



Calorie Analysis Page Display

Here, users can see a bar graph showing their calorie consumption each day for the past week. Each coloured bar represents a different meal type (e.g., breakfast, lunch, dinner, other, supper), providing a clear visual breakdown of eating patterns. This feature supports reflection and progress tracking over time.

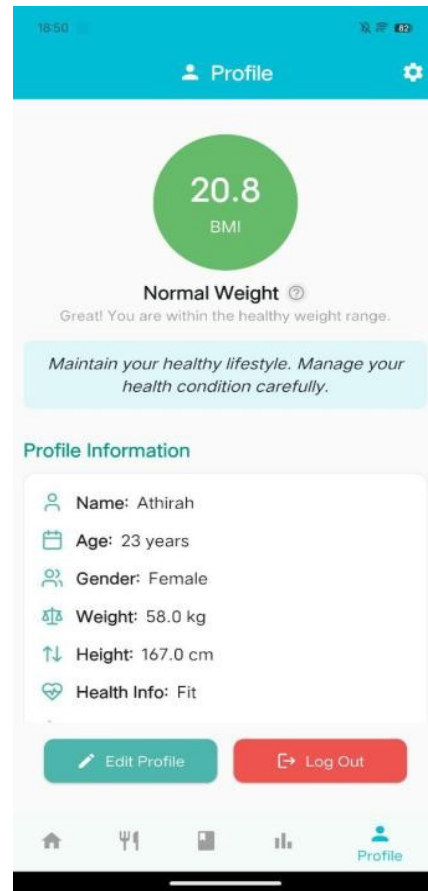
Figure 7
Calorie Analysis Page



Profile Page Display

This screen shows a summary of the user's BMI status (e.g., "Normal Weight") and detailed profile information such as name, gender, age, weight, and height. The circular BMI indicator provides immediate visual feedback. Buttons allow users to edit their profile or log out of the application.

Figure 8
Profile Page



RESULTS AND DISCUSSION

We recruited 4 male and 26 female participants for field testing. We selected participants based on their interests and exposure, and all had experience using health- and nutrition-related apps. Participants' ages ranged from 18 to over 55 years old; 24 were 18-24 years old, 3 were 25-34 years old, 2 were 35-44 years old, and 1 was over 55 years old. Their occupations were recorded as 24 students, 4 employed, and 2 self-employed. Researchers recruited them on the students' campus at Universiti Utara Malaysia (UUM). Participants who expressed interest were willing to dedicate approximately 20-30 minutes to the evaluation session. Before the session began, all participants were fully informed of the consent procedures and data protection measures for personal health data, and all personal data and responses were kept confidential and used strictly for this study.

The field test results show that users received Watch My Calorie well, particularly in usability, feature performance, and user satisfaction. Using a systematic User Acceptance Testing (UAT) questionnaire, 30 participants assessed the application. We used a 6-point Likert scale to collect quantitative data, while open-ended questions gathered qualitative input. We removed incomplete records at the outset. We found only a few missing data points in the qualitative input, as we did not make it mandatory. All other necessary responses for detailed findings were obtained completely for 30 participants.

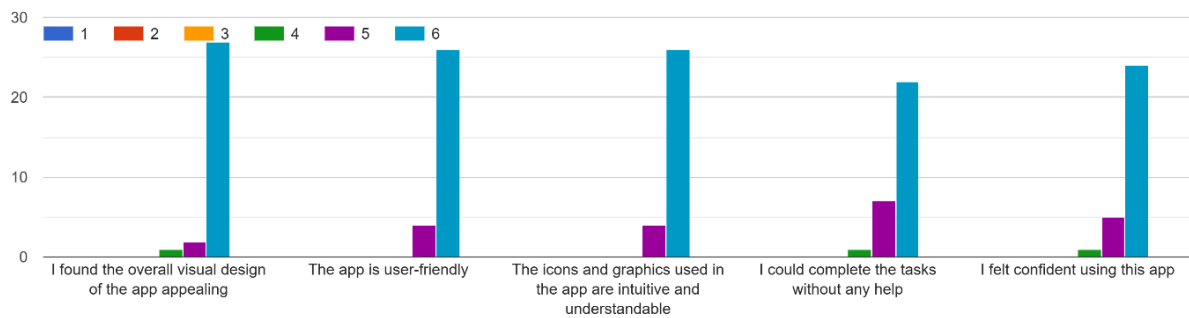
Usability Experience

Figure 9 shows a remarkable average score of 5.81 out of 6 for usability experience, including an appealing interface, user-friendliness, and interaction design. Most users said they could complete the tasks independently and felt confident in their skills. This aligns with the design goals, which were to keep features simple and not complicated. The respondents also appreciated the clean layout, simple icons, and responsive transitions.

Figure 9

Usability Experience

What do you think of the app experience?



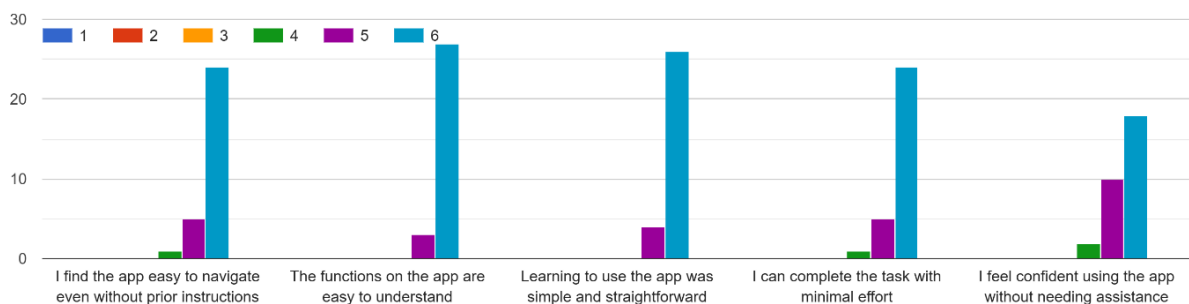
Perceived Ease of Use

Figure 10 shows that the perceived ease of use category recorded an average score of 5.77. Users agreed that the application's layout and tools were easy to understand, even without prior instructions. Users described features such as meal logging, data visualisations, and screen navigation as seamless and responsive. Most users completed tasks with minimal effort, and the application was praised for requiring little to no learning time. These findings demonstrate that the application's modular design, clean structure, and responsiveness contribute significantly to a smooth user experience.

Figure 10

Perceived Ease of Use

Perceived Ease of Use



Perceived Usefulness

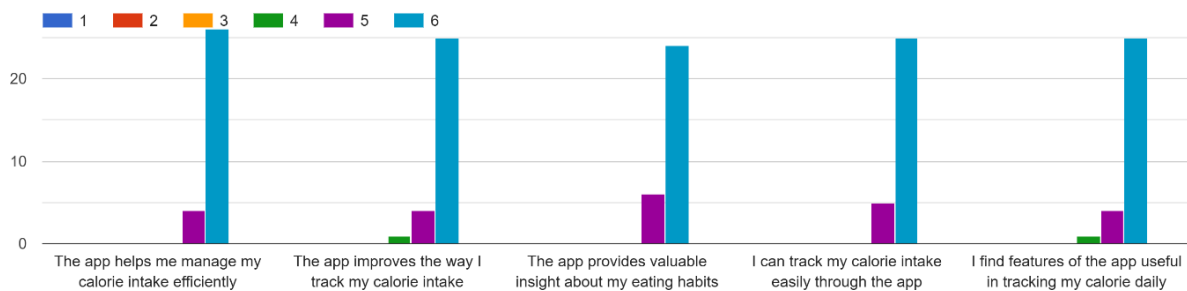
Figure 11 shows the average perceived usefulness score is 5.82 out of 6. Users recognised Watch My Calorie as a practical, helpful tool for managing their daily calorie intake. Users credited the application

with improving meal tracking and offering insights into their eating habits. The BMI calculator feature was especially well received for its automatic calculation and instant health classification, which helped users better understand their weight status. Likewise, users commended the daily calorie intake bar graph for making nutrition tracking more engaging and visually clear. Users found these features informative and motivational, as they let them visualise progress and make better dietary decisions. Overall, the combination of reliable functionality and contextual feedback significantly contributed to the application's perceived effectiveness.

Figure 11

Perceived Usefulness

Perceived Usefulness



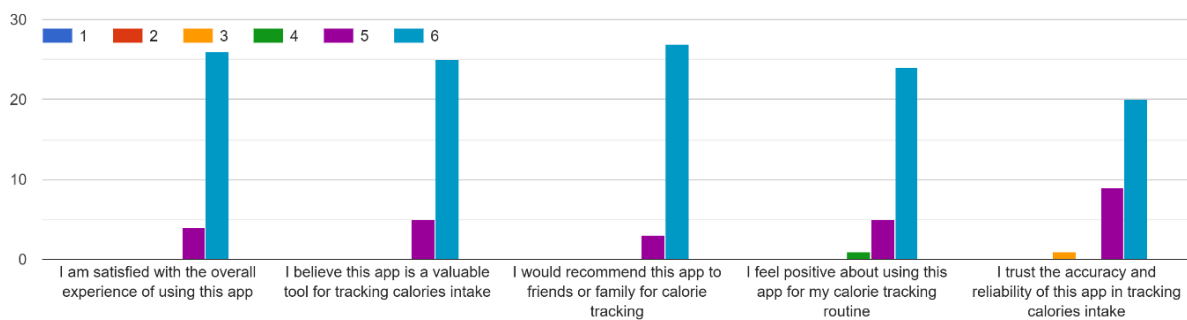
Perceived Acceptance

Figure 12 shows the average perceived acceptance score was 5.79, reflecting participants' high satisfaction with their experience. Most users expressed confidence in the application's reliability and believed it was a trustworthy tool for daily calorie tracking. Most stated they would recommend the application to friends or family, and many emphasised its usefulness compared to other tracking methods they had tried, such as paper journals or general apps like Google Fit or MyFitnessPal. Trust in the application's accuracy and reliability also contributed to users' positive feelings about integrating it into their health routine.

Figure 12

Perceived Acceptance

Perceived Acceptance



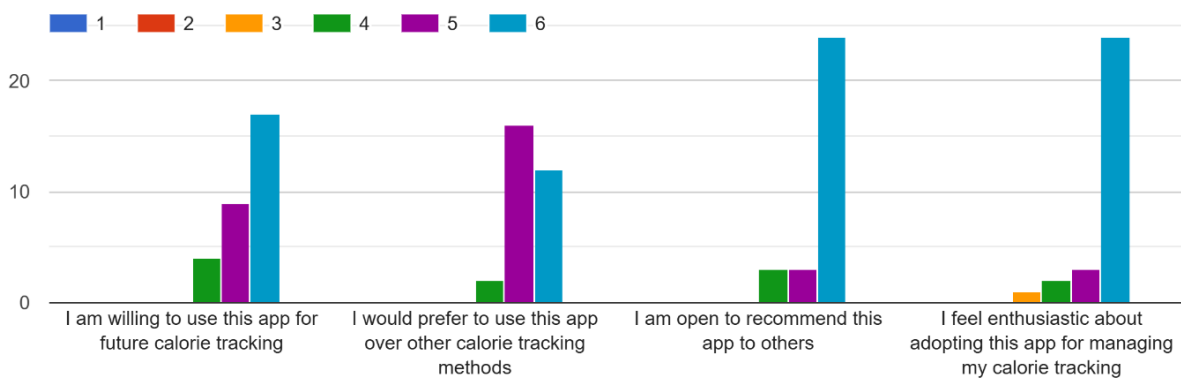
Intent to Use

Figure 13 shows that, in terms of intention to use, the average score was 5.53, which is significantly lower but still quite positive. Participants expressed enthusiasm for using the application in the future if it continues to improve based on feedback. Several users said they preferred this application over other calorie-tracking options because of its focus on local food, clean layout, and personalised features like BMI analysis. Some customers also suggested a larger food database, automatic calorie calculations for personalised meals, and fitness-tracking integration, but they presented these as suggestions rather than limitations. Overall, most respondents said they would keep using the application if it is made available and would recommend it to others.

Figure 13

Intent to Use

Intent to use



SUMMARY OF FINDINGS

Figure 14

Average of User Testing Result

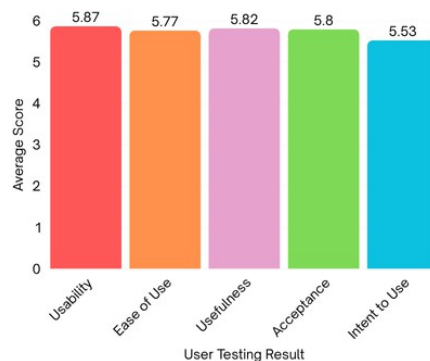


Figure 14 shows the average bar graph of Watch My Calorie user testing results, which were highly positive across all key evaluation dimensions. Participants, primarily young adults and university students, found the application visually appealing, easy to use, and functionally effective. The usability experience scored an average of 5.81 out of 6, indicating that participants well received the design and navigation. Users praised the intuitive interface, the clear layout of icons and menus and the overall user-friendly experience. In terms of features and functionality, the application scored an average of

5.77 for perceived ease of use and 5.82 for perceived usefulness. Users were able to navigate the application without difficulty and found key features such as meal logging, BMI calculation and calorie graph visualisation highly beneficial for managing dietary intake and making informed food choices. These features were informative and motivating, helping users track progress toward their health goals. The acceptance dimension averaged 5.79, indicating strong user trust and satisfaction. Most participants said they would recommend the app to others and found it a dependable, useful resource for tracking calories. The intention-to-use score averaged 5.53, suggesting users are highly willing to continue using the application, with many expressing enthusiasm about integrating it into their daily routines.

Qualitative feedback further confirmed the application's success in delivering a personalised and culturally relevant experience. Commonly praised elements included the automatic BMI results, engaging calorie intake graphs and clean UI design. Suggested improvements included expanding the food database, adding automatic calorie suggestions for custom meals, and enabling user profile personalisation. These recommendations highlight opportunities to enhance the application's value and improve long-term engagement. Overall, the findings suggest that Watch My Calorie meets user expectations and provides a practical solution for self-monitoring calorie intake. With minor enhancements, the application holds significant potential for broader adoption and continued development as a health-supportive digital tool.

IMPLICATIONS OF THE RESULTS

The field-testing results for Watch My Calorie highlight several important implications for mobile health (mHealth) application design, particularly for promoting healthier eating habits among young adults. The high usability and satisfaction scores suggest that a culturally relevant, user-centred application can significantly support users in managing their nutrition; this strengthens previous findings that effective calorie tracking tools positively impact eating behaviours (Keskin & Köse, 2023).

A key implication is the importance of localisation. Unlike many global apps that overlook regional dietary patterns, Watch My Calorie integrates familiar Malaysian foods, enhancing user engagement and usability. This aligns with Rahim et al. (2025) and Gayatri et al. (2024), who emphasise that localised content is crucial for adoption and long-term use in diverse populations. The positive reception of personalised feedback, such as the BMI calculator and calorie intake graphs, reinforces the need for visual, actionable insights, a trend also noted in Standen and Rothman (2023) and Gioia et al. (2023).

Additionally, the high intention-to-use scores suggest the application's potential for sustained engagement, especially if future updates address user suggestions such as auto-calorie estimation and activity tracking. This finding supports Vlahu-Gjorgievska et al. (2023), who argue that personalisation and simplicity are key drivers of long-term app use. As digital health technologies expand, this application demonstrates how well-designed, localised mobile solutions can empower users to take control of their nutritional choices (Abeltino et al., 2025; Lo et al., 2024).

CONCLUSION

Watch My Calorie is a mobile application designed to help users track daily calorie intake and encourage healthier eating habits. Built with Flutter and Firebase, the application includes meal logging, BMI calculation, visual calorie tracking, and personalised recommendations based on individual health data. It was designed with a localised focus for Malaysian users and followed the V-Model methodology

throughout development. Emphasising simplicity, clarity, and accessibility, the application helps users make informed nutritional decisions while keeping the interface modern and easy to navigate.

Findings from the field test with 30 participants revealed strong user satisfaction in usability, functionality and engagement. Users praised the intuitive design, cultural relevance and clarity of features like the BMI calculator and daily calorie graph. These results confirm the application's value in helping users understand their dietary patterns and make informed nutritional decisions. User feedback also suggested future improvements, such as expanding the food database, automating calorie suggestions and integrating activity tracking. With these enhancements, Watch My Calorie could evolve into a more all-encompassing health platform.

Overall, the study demonstrates that well-designed, localised mHealth applications can effectively support nutrition awareness and contribute to public health goals among young adults. Furthermore, as digital health tools continue to evolve, there is a growing push for applications to integrate dynamic feedback systems that adapt to users' changing health data. Salinari et al. (2023) highlighted how artificial intelligence and digital technologies can personalise nutrition assessments and interventions, improving both user engagement and outcome effectiveness. This growing trend underscores the need for Malaysian-focused applications that combine simplicity, localisation, and meaningful analytics to improve public health impact.

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