Website Redesign of Bandung City Special Dental and Oral Hospital

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ABSTRACT: This study examines the redesign of the Bandung City Special Dental and Oral Hospital (RSKGM) website to address usability and accessibility issues in public healthcare digital platforms. As digital health services have become increasingly essential, particularly after the COVID-19 pandemic, hospitals are expected to provide efficient, user-friendly, and integrated online systems. The existing RSKGM website presented several UI/UX weaknesses, such as the separation of registration and information pages and poorly designed call-to-action buttons, which hindered the user experience. Using a qualitative approach supported by interviews, observations, questionnaires, and literature review, the research applied the 5W+1H and SWOT analytical frameworks, followed by wireframing, prototyping, and usability testing. Results showed that 69.6% of users found the previous website unattractive and difficult to use, while 85.7% agreed it needed a redesign. The new website successfully integrated registration and information services, improved call-to-action clarity, and reduced registration time from 15 seconds to 1.5 seconds. The novelty of this study lies in its integration of User-Centered Design (UCD) and the AISAS communication model to develop a contextual framework for redesigning digital health services in public hospitals, offering a new approach that bridges usability, communication strategy, and institutional branding. The findings demonstrate how user-centered redesign can enhance efficiency, accessibility, and user satisfaction while providing practical implications for digital transformation in public healthcare institutions.

Keywords: Website Redesign, UI/UX, Digital Health Services, Bandung.

INTRODUCTION

The rapid growth of digital technology has transformed how healthcare institutions provide services and communicate with patients (Wang et al,., 2021; Kucheriavy, 2024; Sharma et al., 2025). In Indonesia, the COVID-19 pandemic further accelerated the adoption of e-health platforms as a means to improve accessibility, efficiency, and transparency of healthcare services. Hospitals are now expected to integrate digital solutions—such as online registration and information systems—into their operations to enhance both patient satisfaction and institutional efficiency (Braa et al., 2017).

Bandung City Special Dental and Oral Hospital (RSKGM), a public hospital specializing in dental and oral health, has implemented a website to support digital services. However, the current website faces several limitations in terms of user interface (UI) and user experience (UX). Users have reported difficulties in accessing information, inconsistent visual design, and fragmented navigation between registration and information services (Zhong et al., 2022). These concerns reflect broader empirical findings showing that healthcare websites often exhibit deficiencies in navigational clarity, layout consistency, and accessibility compliance, all of which significantly diminish user engagement and perceived service quality (Hotanen, 2024).

Recent studies highlight that post-pandemic digital transformation has escalated user expectations regarding the intuitiveness and efficiency of online health platforms (Lee et al., 2022). Patients increasingly expect streamlined interaction flows, responsive interfaces, and accessible content—elements critical to building trust and facilitating e-health adoption (Nguyen et al., 2021). Inadequate UI/UX design not only discourages usage but also restricts equitable access to essential health services, particularly among individuals with limited digital literacy or accessibility needs (Sundar & Hernandez, 2022).

The significance of this problem lies in the fact that hospitals are not only healthcare providers but also public service institutions that must ensure inclusivity, usability, and accessibility in their digital communication platforms (Palazzo et al., 2024; Medina-Aguerrebere et al., 2024). This lack of optimization reveals a gap between the increasing demand for effective e-health services and RSKGM's current digital capacity (Jordanova, 2010; Knevel & Hügle, 2022).

The research problem is therefore defined as follows: How can a user-centered redesign of the RSKGM website improve its usability, efficiency, and effectiveness as a healthcare information and service platform? Addressing this problem involves considering both technical and non-technical aspects, including design aesthetics, functional integration, and user accessibility (Chen et al., 2025; Kaur et al., 2024). A user-centered redesign of the RSKGM website can significantly enhance its usability, efficiency, and effectiveness by integrating principles from user-centered design, human-computer interaction, and user experience design. By actively involving users throughout the development process, the redesign can ensure that the platform meets their needs and expectations, ultimately leading to a more intuitive and accessible interface (DeVito Dabbs et al., 2009; Mival & Benyon, 2015)

The main objectives of this study are (1) to identify and analyze the weaknesses of the current RSKGM website (Setiawan et al., 2024); (2) to redesign the website using principles of UI/UX and visual communication design (Syach et al., 2025; Mustajib & Kurniawati, 2023); (3) to evaluate the redesign through usability testing (Kholik et al., 2024; Black, 2015; Mitchell, 2010; Rinder, 2012) and (4) to provide design recommendations that can strengthen the hospital's digital services and branding (Ryan & Prahartiwi, 2023).

This research contributes to the literature by combining empirical findings with a methodological approach grounded in design studies. It highlights how user-centered design strategies can improve healthcare websites in local public institutions, an area that remains underexplored in Indonesia (Puspitasari & Cahyani, 2018).

METHOD

Research Type

This study adopts a design science and user-centered design (UCD) approach using a mixed-methods design. Qualitative methods - including interviews, observations, and heuristic evaluations - were used to identify user needs, while quantitative methods such as surveys and usability tests evaluated the redesign prototype.

Population and Sample/Informants.

- Population: Users and stakeholders of the Bandung City Special Dental and Oral Hospital (RSKGM) website, including (i) patients and caregivers, (ii) prospective patients, and (iii) hospital staff (administrative/IT/registration).
- Sampling strategy: Purposive sampling for interviews and usability tests to ensure variation in age, digital literacy, and visit history; convenience sampling for online surveys.
- Inclusion criteria: Age ≥18; has used or intends to use dental/oral health services; able to consent.
- Exclusion criteria: Severe visual/cognitive impairments that prevent task completion without assistive tech (unless accessibility testing is the focus), or non-consenting individuals.

Research Location

Bandung City Special Dental and Oral Hospital (RSKGM), Bandung, West Java, Indonesia. Interviews and usability tests sessions were carried out both on-site and remotely through screen-sharing.

Instrumentation or Tools

This study employed a combination of qualitative and quantitative instruments. Semi-structured interviews and online questionnaires were used to capture demographic data and user experiences. Heuristic evaluation using Nielsen's 10 usability principles and the WCAG 2.2 AA checklist assessed the existing website's usability and accessibility. The website's information architecture was refined through card sorting and tree testing, while prototypes were developed using Figma and Adobe XD.

Usability tests measured task success, completion time, error rate, and System Usability Scale (SUS) scores, supported by baseline website analytics where available. All research activities were documented through field notes, observation checklists, and screen or audio recordings with participants' informed consent.

Data Collection Procedures

The study began with a baseline audit of the existing website through content inventory, sitemap mapping, heuristic evaluation, WCAG 2.2 checks, and benchmarking with comparable hospital sites. User research was conducted via semi-structured interviews and online surveys to identify tasks, pain points, and satisfaction levels. Findings were synthesized into personas, user journeys, and prioritized flows, leading to the definition of success criteria such as reduced registration time and improved usability scores. The design process refined information architecture through card sorting and tree testing, followed by low- and high-fidelity prototyping in Figma/Adobe XD, with consistent visual identity and accessibility features. Usability tests applied scenario-based tasks, measuring completion time, success rate, and System Usability Scale (SUS), with iterative revisions made after each round. Final validation compared post-redesign performance with baseline metrics, demonstrating significant improvements in efficiency, navigation, and overall user experience.

Data Analysis

- Qualitative: Thematic analysis (coding interview transcripts/notes) to derive needs, mental models, and usability issues; severity rating for heuristic violations.
- Quantitative: Descriptive statistics (means, medians, CIs) for task time and success; pre-post comparisons (e.g., paired t-test or Wilcoxon signed-rank when non-normal) for baseline vs. redesigned prototype; SUS scoring interpretation (adjective ratings/percentiles).
- Triangulation: Converge findings from interviews, surveys, heuristics, and usability metrics to validate design decisions and prioritize fixes.

RESULT AND DISCUSSION

Questionnaire

A questionnaire was created regarding public awareness of the website and user's preferences for a redesign. The questionnaire was distributed to the public and RSKGM patients. Fifty-six respondents aged 18-40 years participated.

Picture 1. Results of the questionnaire about awareness of the RSKGM website
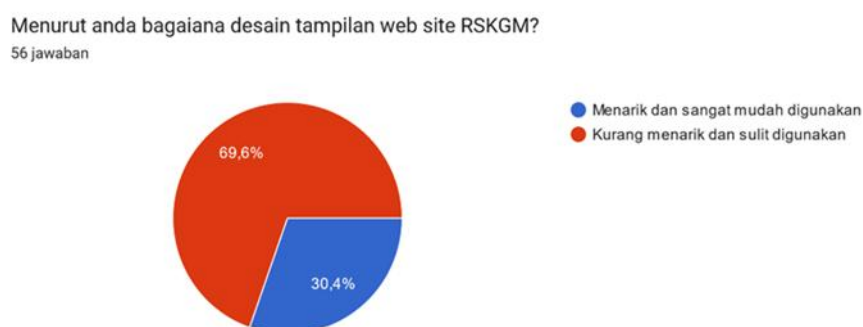
Picture 2. Results of a questionnaire about difficulties in finding information on websites

75% of respondents were unaware of the RSKGM website, while 25% had accessed it before. Respondents found it difficult to find the information they wanted on the RSKGM website, with 32.1% finding it difficult and 39.3% finding it difficult to use. This questionnaire also included opinions about the RSKGM website and the need to redesign the website.

Picture 3. Results of questionnaire about RSKGM website

Picture 4. Results of questionnaire about redesigning website

Based on the questionnaire results, 69.6% of respondents answered that the website was unattractive and difficult to use. 85.7% of respondents also agreed that the website needed to be redesigned.

Communication Strategy

This design applies the AISAS (Attention, Interest, Search, Action, Share) communication framework. The AISAS method explanation for this research is shown in Table 1.

Table 1. AISAS Method Explanation

No	Methods	Explanation
1	Attention	Creating posters, banners, and motion graphics that encourage users to access the RSKGM website
2	Interest	Users interest to know RSKGM and try scan QR code in supporting media
3	Search	Users search information about RSKGM in website by scanning QR code or copying the url
4	Action	Users access RSKGM website, register for appointments, consult online, and find information about RSKGM
5	Share	Users recommend RSKGM as a professional dental hospital and using RSKGM website

Message Strategy

In this redesign, in order to achieve the objectives, a cognitive approach was taken, emphasizing intellectual aspects such as a person's way of thinking and knowledge. An affective approach was also taken, focusing on emotional aspects such as a person's interests. In addition to improving service for users, this redesign also aims to increase brand awareness among the public and improve the company's image among users, especially when registering online through the website.

Creative Strategy

Creative strategy is a process of communicating a message using verbal or visual means. In this design, it is used as follows:

1. Website Concept

The website is tailored to ages 18-40. The colors reflect RSKGM's brand identity and the dental profession. The language used is more informative in line with the message to be delivered so that it is cohesive. Images of teenagers undergoing dental treatment by a doctor are selected according to the target age group, with smiling facial expressions to give a friendly impression.

2. Supporting Media Concept

Supporting media such as posters and X-banners were created with a minimalist style and few elements so that the audience could focus on the message being delivered. In addition to the use of posters and X-banners, motion graphics were created to explain the features available on the website.

Visual Strategy

1. **Web Page Anatomy**

   Website design uses web page anatomy for the design. As in the following design:

   a. Containing Block

      The margins created for this website are on the edges so that there is a border that limits it.

   Picture 5. Containing Block on Website

   b. Logo

      Therefore, in the redesign of this website, the RSKGM logo was placed at the top left because most websites place their logos there. This was made to increase brand awareness among users because UX is influenced by everyone's habit of reading from left to right, making it very easy to find the logo.

Picture 6. Implementation of Logo
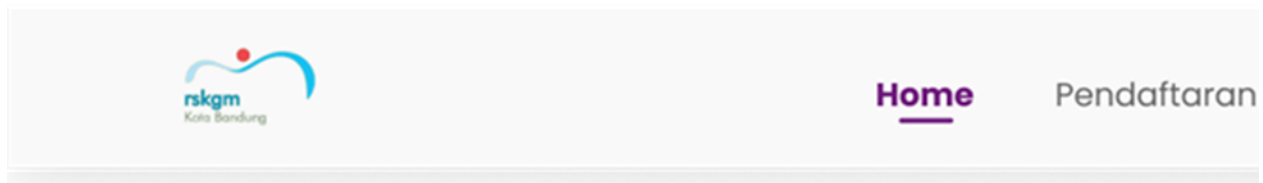
c. Navigation

The navigation bar on this website has features such as home, registration, profile, doctors, news, and articles, as well as a search feature to make it easier for users to find the information they want without scrolling or moving between pages several times.

Picture 7. Implementation of Navigation Bar
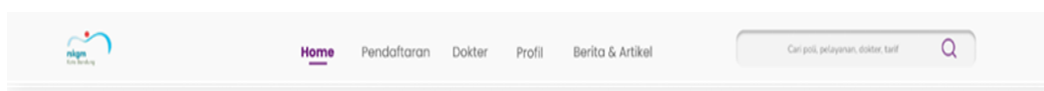
d. Content

The content is placed in the center of the website, which contains important features as well as secondary features. Basically, all of this content conveys information about RSKGM. This website does not use sidebars. Each photo and typography is given white space, and there is always white space between sections of information. This is intended to make the website look less cluttered and easier for users to read.

Picture 8. Implementation of Contents
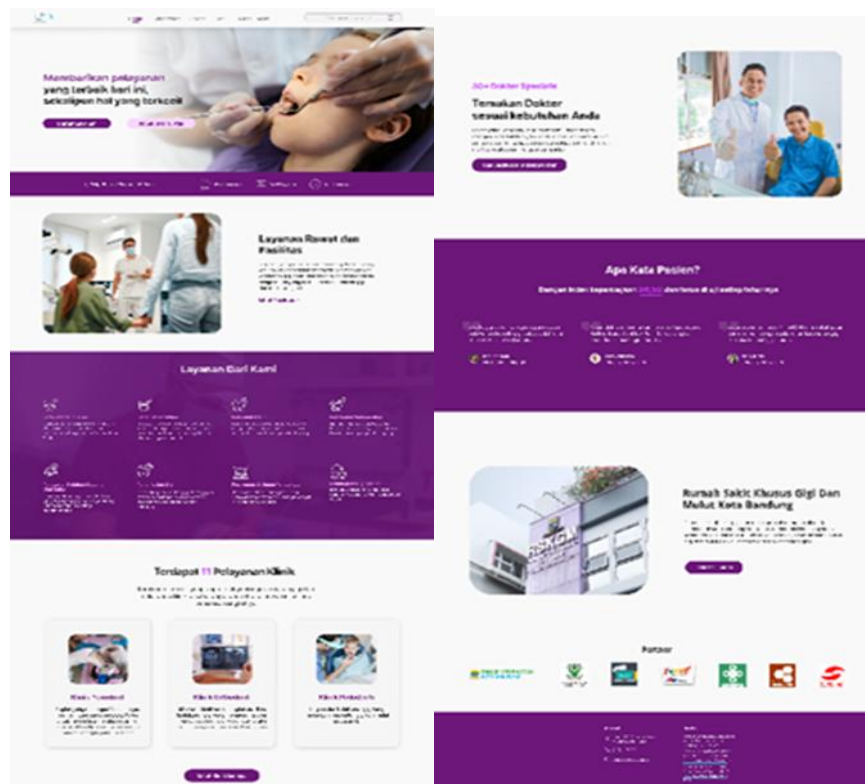
e. White Space

White space is used to provide space in a design. This aims to improve readability. White space can also be used to create groups, such as information that you want to highlight, which will be distinguished by color, font size, and white space from information that only supplements the highlighted information.

Picture 9. Implementation of White Space
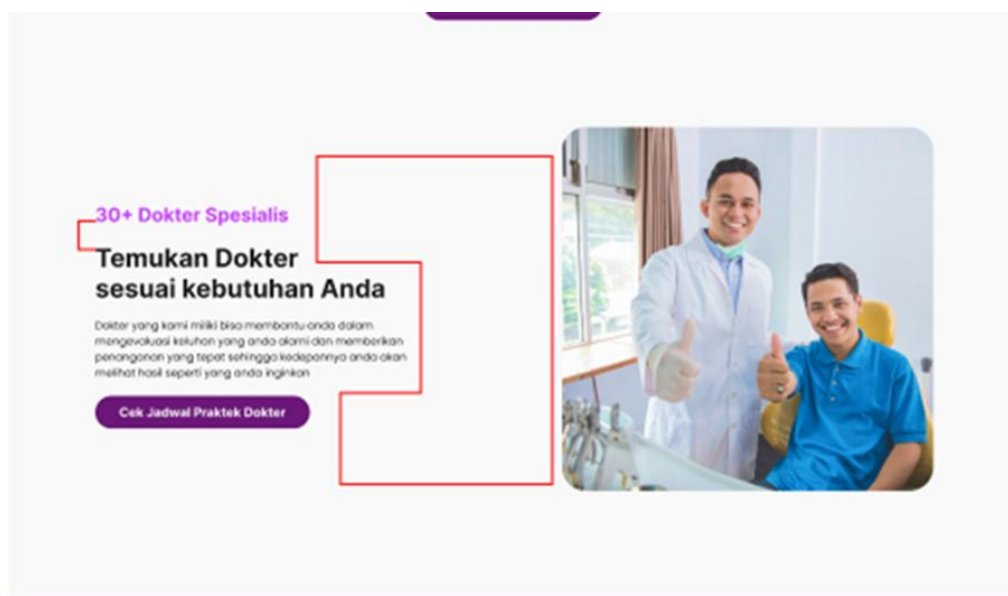
f. Footer

In the redesign of the RSKGM website, the footer provides information about the address, contact details, and a menu for news and articles.

Picture 10. Implementation of Footer
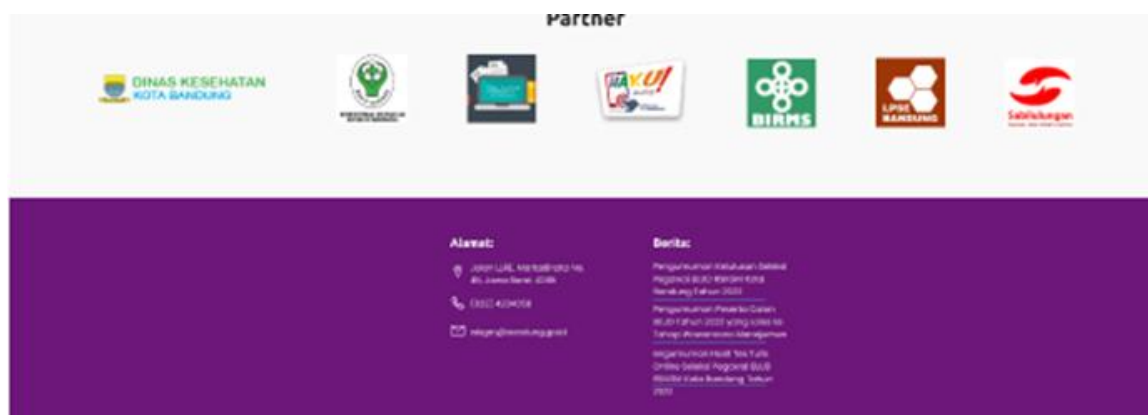
2. Typography

The fonts used for this redesign are Poppins and Inter. Poppins is used for the body text and Inter is used for the headers. These two fonts were chosen for their high readability and Inter was designed specifically for digital applications such as websites. Here is how they are used on the website:

Picture 11. Website typography

3. **Layout**

a. Proportion

The proportions on this website can be seen, for example, in the typography size, which is not too large so that it does not exceed the specified grid and can balance the height of the photo and also the length of the photo following the length of the typography.
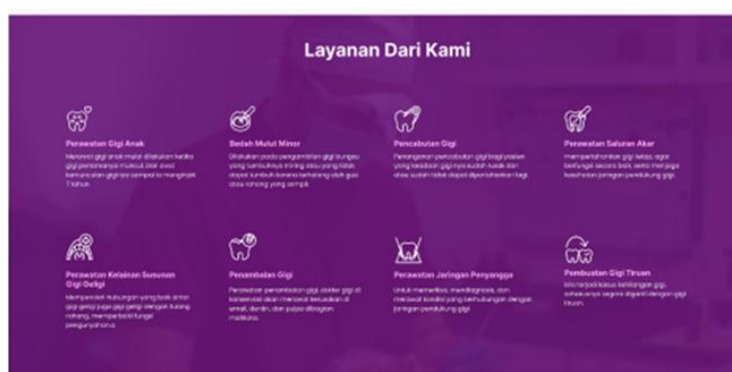
Picture 12. Implementation of Proportion
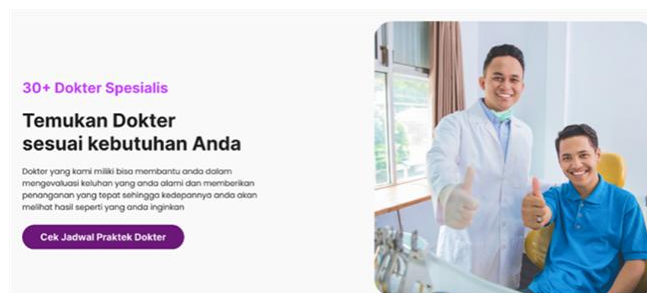
b. Balance

The application of balance here is viewed vertically and horizontally, which when cut into two parts becomes balanced and neither part stands out from the other.

Picture 13. Implementation of Balance

c. Rhythm

The rhythmic element in this website is the repeated use of colors. For example, on the home page, every white color is followed by purple, and then white again. This ultimately creates the following rhythmic element:

Picture 14. Implementation of Rhythm

d. Unity

On this website, each design element has a different function and a different shape and color, but all of them come together to make this website more attractive and informative.
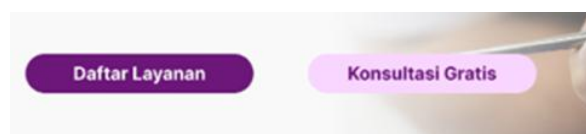
Picture 15. Implementation of Unity
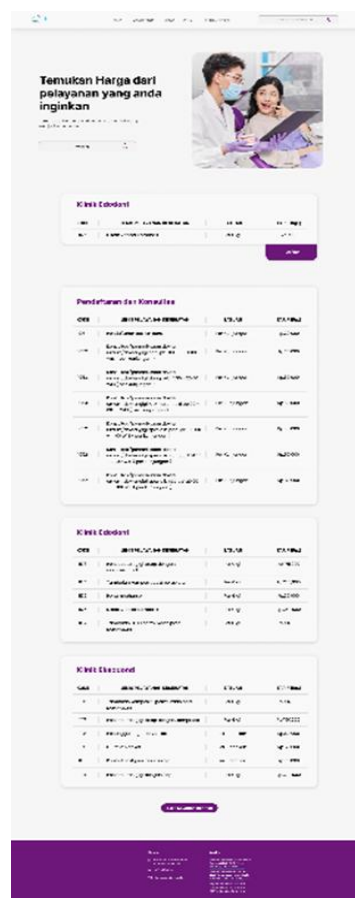
e. Contrast

The use of contrast on websites can be found in calls to action or emphasis on informational text.

**Picture 16. Implementation of Contrast**

4. Color

In this website design, the colors used are taken from the distinctive colors of RSKGM, namely purple, light and dark shades of purple, and black and white to add a minimalist and professional feel.

Picture 17. Color Pallets
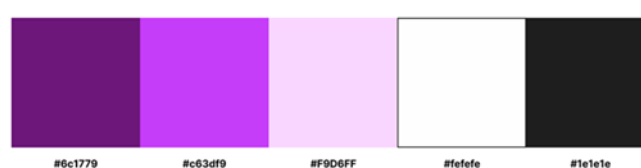
The main color is taken from the uniforms of doctors and employees, resulting in the hexadecimal number #6E3084. This color is still quite bright, so a darker color was sought that was not too far from the main color. The resulting color is hexadecimal number #6C1779.

Picture 18. Base color
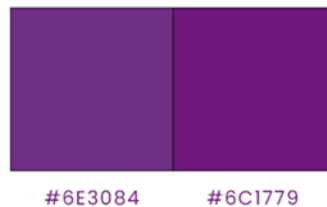
The purple color palette is obtained by entering the main palette into the color wheel on the Adobe Color website. This selection uses the monochrome method. Several colors are obtained, and only three colors are selected, but there are still color changes to make them look more contrasting. The colors selected and changed are #AF25C4 and #FAD6FF.

Picture 19. Base color wheel
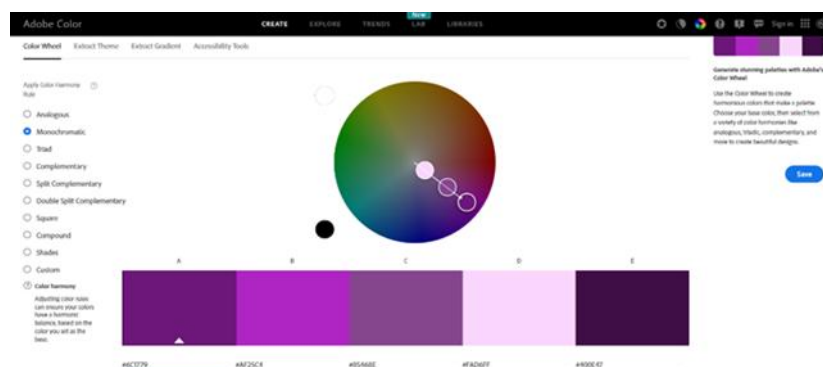
To add contrast to the CTA, the color #FAD6FF was increased to F9D6FF. And for the color #AF25C4DI, it was shifted slightly downward to #C63DF9. So that the color wheel became like this:
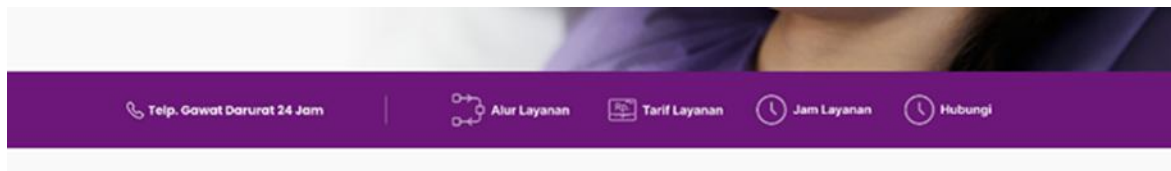
Picture 20. Color wheel
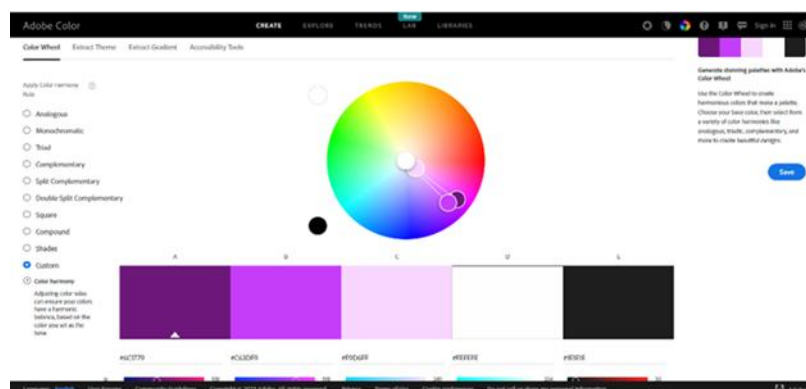
5. Icon

In this redesign, icons serve to clarify service features and facilitate information delivery, improving user comprehension. The following are examples of their application in the website design:
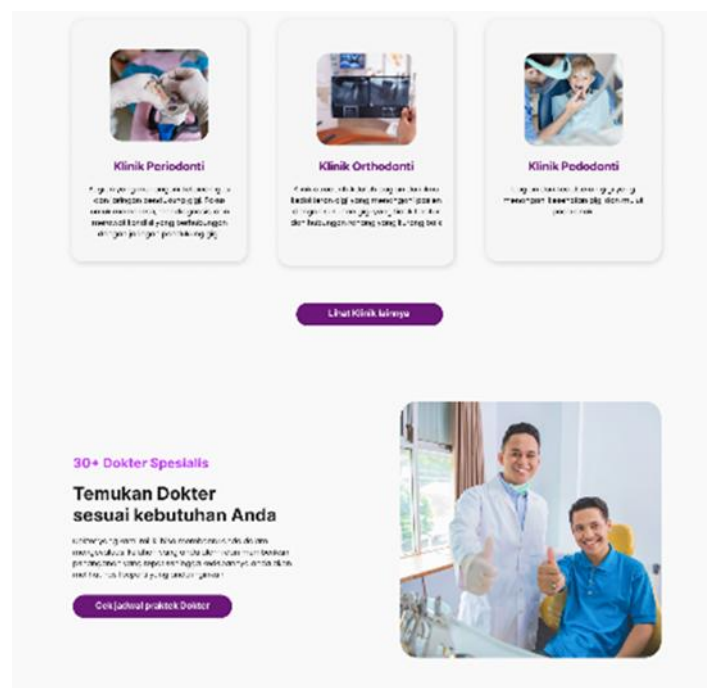
Picture 21. Implementation of Icon

6. Photography

The photos were taken from Freepik and Envato Elements assets due to the difficulty of taking photos at RSKGM and maintaining the privacy of RSKGM and its patients. In accordance with Law No. 17 Article 177 of 2023 concerning health and Government Regulation Article 44 No. 4 of 2018, all health services must maintain the confidentiality of patients' personal health information, and hospitals may refuse to disclose any information to patients. Patients have the right to confidentiality regarding their diagnosis and patient data. All photo elements were taken from these two websites, and we obtained several photos related to dentistry, dental clinics, and dental procedures to use for this website.
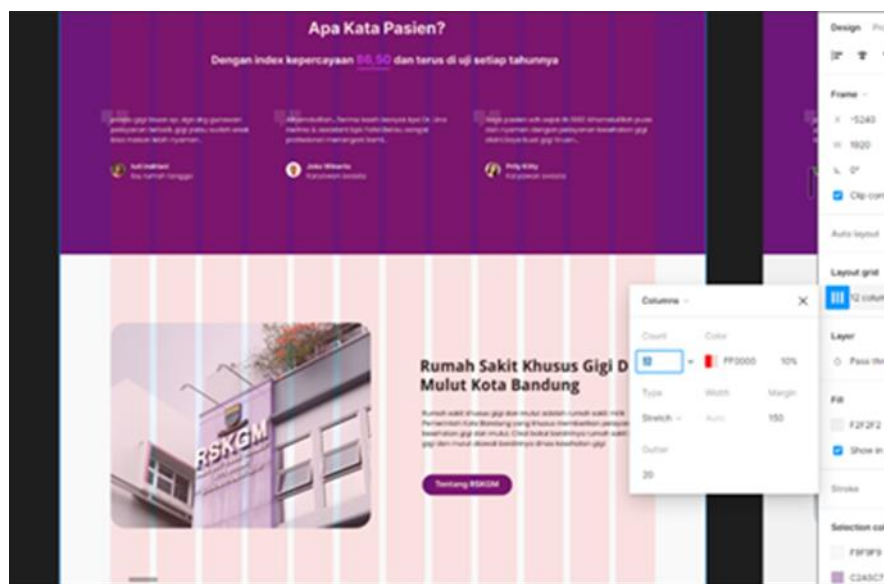
Picture 22. Implementation of Photography

7. Grid

Website design uses grids that are widely used by UI/UX designers, which are 8 and 12 grids. This website design uses a 12-column grid, 20-pixel gutter, and 150-pixel margin. Here is the application in website design.
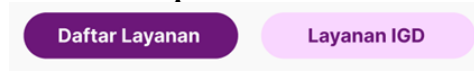
Picture 23. Implementation of Grid

8. **Gestalt Principle**

a. Similarity

In its application, this similarity is used to inform users which text is clickable. The image shows that clickable text is distinguished by color. Text with the same color can only be read without performing any action.

Picture 24. Implementation of Similarity

b. Proximity

The icons and titles are close together, and there is sufficient space between each piece of information. This makes it easy for users to see that the icon represents the title below it, and not the title next to it. Similarly, the title is represented by the icon above it, not below it.

Picture 25. Implementation of Proximity

c. Continuity

Continuity is something that creates a flow for users. This website uses the principle of continuity to create a flow whereby when users act as the doctor feature, a pop-up appears below to direct users to select a date for treatment at RSKGM.

Picture 26. Implementation of Continuity
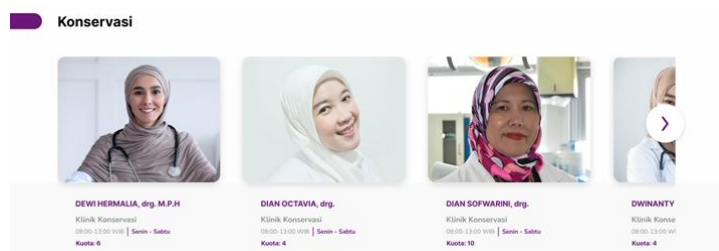

d. Closure

The doctor display feature shows a cropped rectangular photo of the doctor. This is used to inform users that there is additional information next to it.
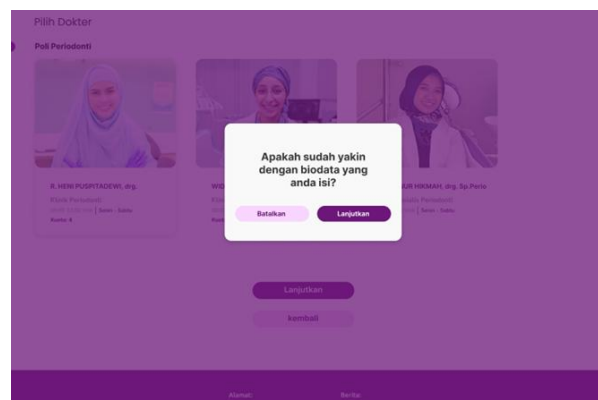
Picture 27. Implementation of Closure

e. The Figure-Ground

The Figure Ground is used to display service hours and also pop-ups to reassure users with the data that has been entered.

Picture 28. Implementation of Figure-Ground

f. Enclosure

The service rate display contains information that needs to be conveyed, namely the rates for endodontics and exodontics. To make it easier for users to see the rates for each clinic service, the enclosure principle is used. This is done by creating a border that separates the rates for endodontics and exodontics.

Picture 29. Implementation of Enclosure

The redesign of the Bandung City Special Dental and Oral Hospital (RSKGM) website highlights the effectiveness of applying user-centered design principles and communication models in digital health services. By integrating the AISAS framework, the redesign not only improves usability but also enhances user engagement, moving users from awareness to active use and recommendation. These findings are consistent with prior studies emphasizing the importance of user journeys in digital platforms.

The application of visual design principles—such as color harmony, typography, balance, and white space—ensured readability and consistency, directly addressing the weaknesses of the previous website. Usability testing confirmed significant improvements, particularly in efficiency and user satisfaction. This supports the view that healthcare website redesigns should not focus solely on aesthetics but also on functionality, accessibility, and branding, making the RSKGM case a relevant contribution to both practice and literature in digital health communication.

CONCLUSION

The redesign of the RSKGM website successfully transformed it into a more accessible and user-oriented digital platform for health information, registration, and service promotion. The redesigned website helps patients access information about RSKGM more easily and enhances the hospital's service efficiency. Therefore, this redesign can help improve the user experience of the RSKGM website and provide convenience in the field of RSKGM services. Usability testing confirmed that the redesigned website enabled users to complete key tasks in less time and with greater ease, demonstrating clear functional gains over the previous version. This is because several call-to-action buttons and features have been added to help users more easily(Li et al., 2023; Syach et al., 2025).

Beyond improving operational efficiency, this study contributes to the growing body of research on digital transformation in public healthcare institutions. It emphasizes the importance of aligning visual communication, usability, and branding in healthcare web design. Future improvements should focus on expanding interactive features such as online consultation systems, accessibility compliance for all user groups, and continuous usability evaluation to maintain long-term user engagement and service quality.

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