DENTAL HYGIENE CALENDAR APPLICATION FOR MONITORING DENTAL AND ORAL HEALTH CARE ON CLIENTS

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Abstract, **Background:** Low public awareness of dental health is also shown by ignoring the schedule for dental checkups which should be carried out regularly every six months. **Method:** Researchers designed an additional feature in the Google Calendar application that can be used to remind clients to meet the planned treatment schedule and to provide information about dental health diagnoses related to meeting basic human needs in the field of dental health. This research is an exploratory study of design applications on the Google Calendar application which was developed into a Dental Hygiene Calendar to monitor dental and oral health maintenance activities carried out by 35 students of the Department of Dental Health, Poltekkes Bandung.
Conclusion: The results of this study indicate that the Dental Hygiene Calendar application is in accordance with the needs, although some users also want further development.

Keywords: Dental Hygiene Calendar Application, Dental and Oral Health Care

Background

Health is the most important part of human life, therefore the maintenance of good and correct dental and oral health really supports the realization of general health [1]. Efforts to improve the degree of dental health require a maximum effort from dental health workers in providing dental and oral health services to the community. On this basis, dental and oral health services are strongly influenced by the performance of dental health workers [2]. Weintraub (2017), stated that today's dental health workers are increasingly required to be able to provide patient-centred care, regulate the process of dental health care and must also be able to be involved in the use of increasingly advanced technology.

However, along with preparing dental health workers who are required to provide complete services, some dental health problems still look quite alarming. Looking at the results of Riskesdas in 2018, dental health problems were at 57.6% and those who received services from dental medical personnel were 10.2%. The proportion of correct tooth brushing behavior is 2.8% [4].

Several other research results related to cases of disease, facilities and infrastructure as well as human resources in the field of dental health, both in Indonesia and abroad are as follows: dental caries has caused a child's lack of ability when chewing food, this has an impact on the incidence of Digestive disorders which ultimately result in the child's body growth being less than optimal [5], In the United States dental caries affects 80% of the world's population with nearly a quarter of adults having untreated caries [6], there is considerable evidence that genetic factors influence periodontal disease and caries susceptibility, with the attributable risk estimated to be up to 50 percent. [7], In addition, as reported by Heaton et al., (2017), as many as 72 percent of mothers stated that they had one or more barriers to accessing dental health care, and were stated by Services et al., (2019), Barriers to the performance of dentists as providers in providing dental and oral services in Konawe Regency, there is a shortage of dentists due to political policies and stakeholder policies.

The research data above shows that there is still a lot of homework that must be handled by dental health workers to alleviate dental health problems in the community. Ramos-Gomez et al., 2020), stated that related to public dental health, there are five main areas that must be done, namely: 1). improve advocacy efforts, 2) support education and practice of dental health services

interprofessionally, 3) promote dental health education and ways to improve health literacy, 4) increase collaboration between community-based dental health workers and schools, and 5) use technology to increase access dental care and health information.

Based on the initial observations and interviews that the author did, most of the clients ignored the planned care visit schedule. Clients only visit the dental clinic only when they have complaints, often not according to the planned care schedule. To overcome this, we need a way to remind the client to stick to the schedule to meet the achievement of the planned care goals

Calendar applications on smartphones are often used as an alternative solution to remind users of an activity that has been planned. One example of an application that is often used is Google Calendar. Therefore, the author makes a similar application design that is more specifically intended to help clients comply with the planned care schedule including the schedule for maintaining oral and dental health that must be done independently.

This study aims to produce a dental hygiene calendar application that can be used to monitor dental and oral health care activities for clients.

Methods

This research is an exploratory research that is exploring opinions, experiences and inputs from supervisors/instructors, students/practitioners and clients [11]. The design of information systems in this study uses a prototyping system design approach, namely a modern engineering-based design approach which is an iterative process that involves close working relationships between designers and users. The working relationship between designers and users is carried out through the Focus Group Discussion (FGD) method as well as in-depth interviews to obtain information/opinions/suggestions/inputs needed in designing the Dental Hygiene Calendar application to monitor dental and oral health care activities for clients that will be used by students [12]. Department of Dental Health of Poltekkes Bandung. Research was conducted in the period February-November 2020. The research location is at Department of Dental Health of Poltekkes Bandung.

Population in this study were all students of Semester V of Diploma III of Departmen of Dental Health who practiced Individual Dental and Oral Health Care. Sample in this study was taken by a total sampling as many as 35 students. Triangulation is carried out by conducting FGDs and/or in-depth interviews with the supervisor of the practice of Individual Dental and Oral Health Care who is also a teaching team for the Informatics Technology course in Nursing/Dental Health Care Services as many as three people and as many as 35 clients.
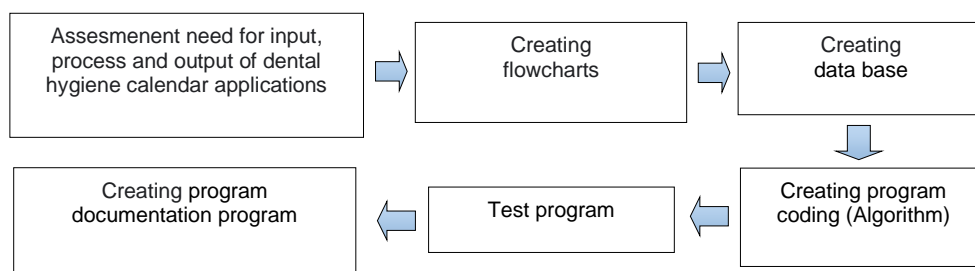
Figure 1. Programming Flow Dental Hygiene Calendar Application

Stage 1: Identify the problem described in the form of identification of the need for the input process and the output process of the Dental Hygiene Calendar application

Stage 2: Create a Flowchart (Flowchart), is a means or supporting equipment whose role is very important in programming, because with a flowchart you can know the flow of a program

Stage 3: Creating a Database, is the stage of creating a database according to the needs of the application to be made, using the Spreadsheet application.

Stage 4: Programming (Algorithm Coding) is the stage where the programmer writes a program using one of the selected programming languages. The programming language used in this design is HTML 5 which has been simplified by the online application maker platform, Glide. This application can also integrate a database in the form of a spreadsheet with the Google Calendar application which will be used as a reminder/alarm application on the client's mobile phone.

Stage 5: Performing Test Program is a program testing stage aimed at checking whether

the program is completely free from errors, either writing errors, calculation errors or logical errors. If it turns out that there are errors in the program, the programmer can make repairs or debug with the available facilities.

Stage 6: Creating Program Documentation After the program is free from errors, it's time to save the program on one of the online storage media (cloud storage) complete with the application domain/web address to be distributed to parties who need it.

Results and Discussion

As mentioned in the previous chapter that the Dental Hygiene Calendar application design was made using a prototyping system design approach, namely a modern engineering-based design approach which is an iterative process that involves close working relationships between designers and users. So in the design process, the researcher always discusses with the supervisors of the Dental and Oral Health Care practice as well as students who will be the operators to determine the design of each design stage. The following is the design of the Dental Hygiene Calendar application as a result of discussions with supervisors and students/operators
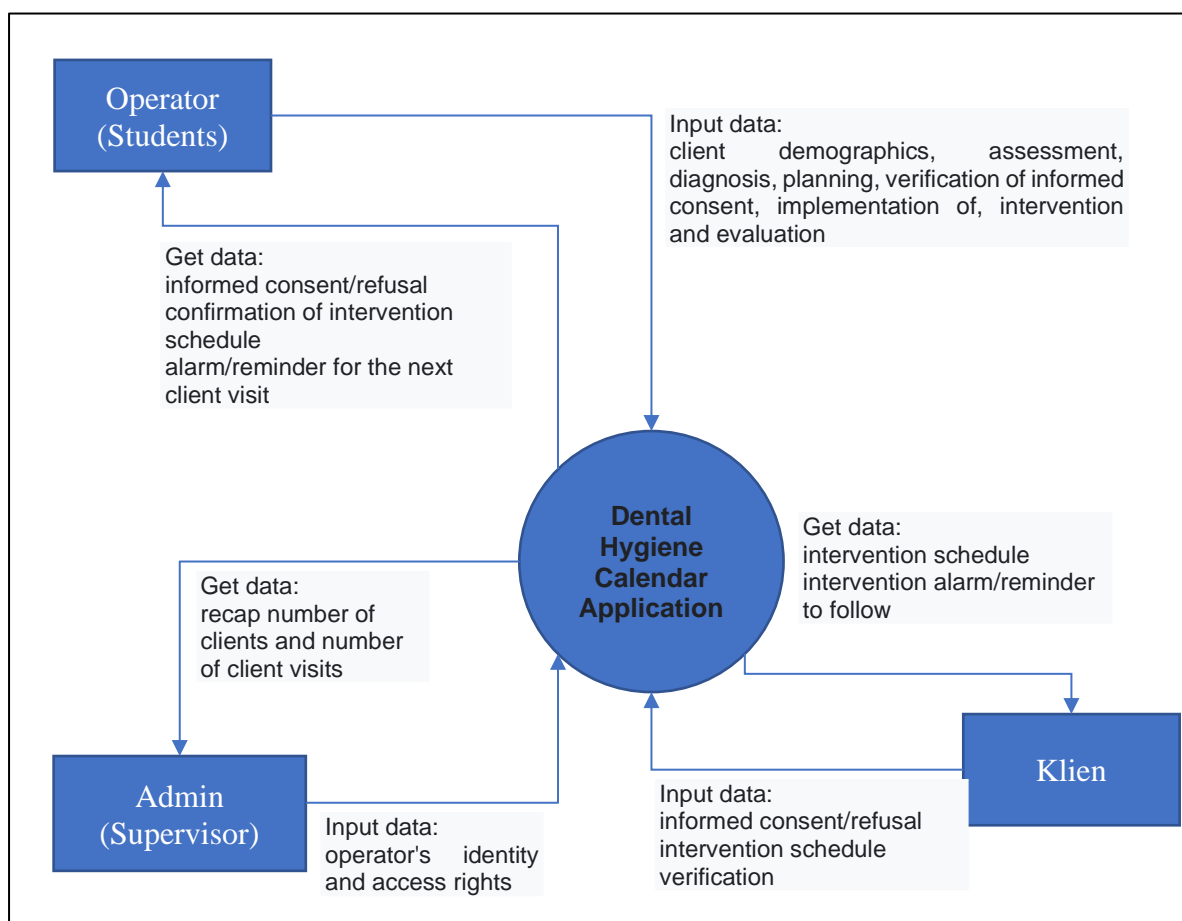

Figure 2. The Dental Hygiene Calendar application is designed to meet the monitoring needs of the implementation of dental and oral health care interventions carried out by service providers as well as by coordinating lecturers/practice supervisors who act as admins

The picture show is that Dental Hygiene Calendar application is designed to meet the monitoring needs of the implementation of dental and oral health care interventions carried out by service providers as well as by the coordinator/practice supervisor who acts as admin. From this context diagram, it is necessary to describe the input process and the output process from and to each user. It starts with the admin who inputs identity data and operator access rights so that the operator can process client data input in the form of demographic data to care planning, followed by the client filling in the informed consent/refusal data and if the client agrees to the

care that will be given and strengthened by the witness, then the operator can verify the informed consent and continue the process of inputting intervention data and the care schedule that the client must follow so that the client will receive notification of the schedule, then the client verifies the schedule which will simultaneously activate the Dental Hygiene Calendar reminder/alarm on the client device and provide notification to the operator that the alarm on the client device has been activated. Next, the operator inputs data on the interventions that have been implemented and the results of their evaluations. In the final output process, the admin will get a recap of the number of clients and the number of visits from each client, this information can be filtered by operator to monitor the achievement of the operator's requirements for the guidance practitioner.
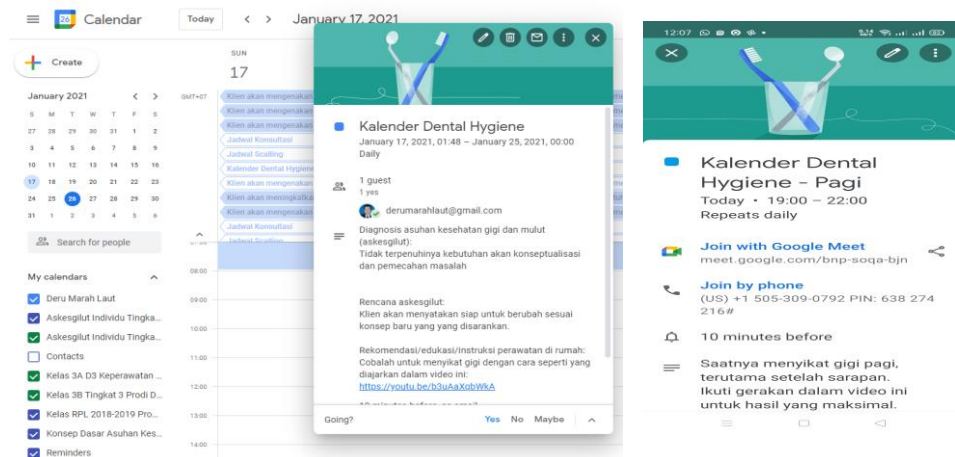
Figure 3. Dental and oral health care intervention schedule that has been active on the client's device

That figure shows the schedule for the Askesgilut intervention that has been active on the client device. The schedule will automatically turn on an alarm on the client's cellphone/smartphone according to the specified time, for example an alarm to remind the client's schedule to visit the dental clinic or an alarm that reminds the client to brush his teeth morning and night. The calendar also includes video links or other learning media needed to educate clients.
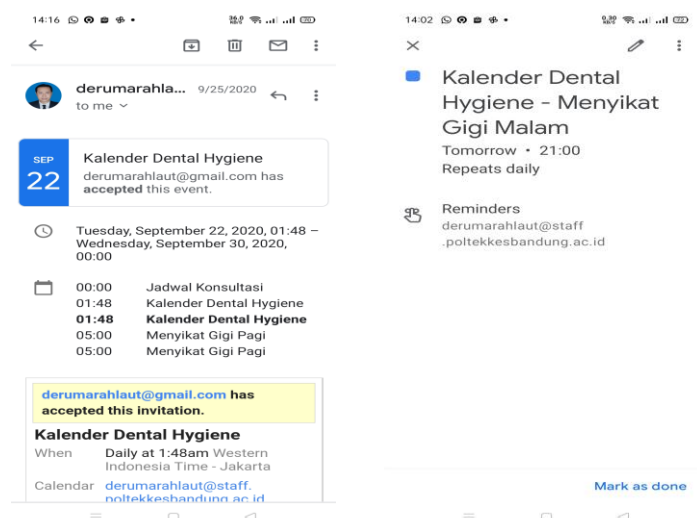
Figure 4. Display Notification Email on Operator Device and Display Alarm/Reminder on Client Device

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Most users benefit from the design of the Dental Hygiene Calendar application, even one operator stated that it was very helpful because the application made it easier for operators and clients to determine an agreed inspection schedule or control time. Likewise, clients who feel helped to care for and maintain healthy teeth. In other words, the existence of the Dental Hygiene Calendar application is in line with their expectations.

Dental Hygiene Calendar application is practical, saves time and paper and stored data is more secure when compared to conventional medical/care record cards. Even from the client's side, it was stated that the advantage of this application is the reminder of a regular brushing schedule, so that clients can regularly maintain their oral and dental health. From the downside, the Dental Hygiene Calendar application is considered not to accommodate users who do not have an email address and not all email owners activate email account synchronization on their handheld devices.

Conclusions

Trial use of the application carried out by students as operators by using their family members as clients. In this trial, the operator registers himself first by logging in using his email address and then filling in the identity form and requesting access rights as an operator. After being verified by the admin, the operator then begins to fill in client data ranging from demographic data to health insurance planning. The Askesgilut plan is explained to the client and if agreed, the client fills out and signs the informed consent on the application that is accessed from the operator's device.

Operator then confirms and signs the informed consent which automatically triggers the application to send the Dental Hygiene Calendar event to the client's email address. The operator then asks the client to open the incoming email from his android device and receive the Dental Hygiene Calendar event by clicking/pressing the "Yes" button which will immediately activate the Dental Hygiene Calendar alarm on the client device and send an email notification to the operator indicating that the client has activate an alarm reminder of the intervention schedule that has been given.

Client is then prompted to open the notification that appears on his device when the alarm sounds. After the Dental Hygiene Calendar window opens, the client is asked to press the "Mark as done" button if the scheduled activity has been carried out

1. Input process and the output process for the Dental Hygiene Calendar application is adjusted based on the type of user (admin, operator and client) as well as the Askesgilut recording card used.
2. Dental Hygiene Calendar application can simply be arranged in the form of a context diagram that describes the input and output processes from and to each user.
3. Dental Hygiene Calendar application database consists of several entities, namely: operator identity, client demographic data, client medical/medical history data, client social history data, client pharmacology history data, client dental health history data, client vital signs data , client's oral hygiene data, oral/facial soft tissue client data, odontogram client data, periodontal client data, health care diagnosis, planning, informed consent/rejection, implementation, and evaluation.
4. Dental Hygiene Calendar application which was built using the Glide platform with Google Sheets as a storage database and Automate.io as a trigger to create calendar events and send them to clients automatically.
5. Test results show that most of the users stated that the design of the Dental Hygiene Calendar application was in accordance with their needs, although some of the users also wanted further development. Thus, it can be concluded that the purpose of designing the Dental Hygiene Calendar application to monitor the client's dental and oral health care is achieved

Author's Contributions

All names listed as authors of this study are fully involved in research activities and each plays a role in the practice of all research activities

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