Mobile Application about Awareness and advice on the Kidney Health for the Kidney Patients

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Abstract:

Health awareness plays an important role in educating the community in various areas of health by various ways. It looks like cornerstone of preventing many diseases by changing unhealthy behavior to healthy behavior. It helps for reducing disease severity by changing daily behavior's. Also, it enhances value of patient's function in disease protection. A technology interested for supporting this program form by mobile application. In this paper are reviewed 10 papers and read about open source software. Also, I did survey questionnaires for Kidney Patients to conclude the importance and impact of health awareness of the mobile application on the health of the Kidney patients. This mobile application aims to easier access to information and save time and efforts. It delivers health awareness for Kidney patients. It is easy to use for all segments of Kidney Patients. The vision of mobile application is conscious and sustainable Omani Kidney Patients. The mission of this mobile application promotes healthy lifestyle and adopt best practices and healthy behaviors for Kidney Patients. It contains tips of Kidney Health, be it texts or images or videos. Also, through this application, the user can listen or share advice to others. Also, you can call through video call and chat through chat messages. This mobile application will serve Kidney Patients by spreading health awareness. It identifies hardware and software for designing mobile application kidney health awareness of kidney patient. It is analyzing budget of cost for each requirement in this project. It is identifying use case diagram to specify users of mobile application, class diagram to specify classes in database, ERD diagram to specify relationship between entities, and data dictionary of each class to specify attributes and type of each attributes. In this mobile application project is designed by using MIT Inventor application and is connected with google drive for saving data in spreadsheets.

Keywords:

Mobile application, Awareness, Advice, Health, Kidney Patients.

Introduction:

The correct knowledge and awareness of health and how to maintain it. It is one of the most important things in our life. Without being in good health on the physical and psychological level, our life will not be happy, and our life affairs will become more difficult, and painful. Therefore, your knowledge and awareness of your health and how to maintain and improve it and know the mechanism of occurrence of various diseases and how to avoid and cure them. How do you and your body work to change the types of knowledge that you must be aware of in order to enjoy a happy life. Health knowledge is supposed to be available to everyone, without exception. Therefore, technology is involved in facilitating the access of information to all members of society. In this project, mobile application of Kidney health awareness is one of technology to play role for accessing information to users of phone in anytime and anywhere. It contributes to reducing the severity of the disease in Kidney patients. Also, it contributes to changing some wrong behaviors that lead to some diseases. Some challenges for designing awareness kidney health mobile application are check, estimation user needs, administration of resources, security to control malware stress in the play

store, application good performance and bug-free app that works on minimum battery consumption. (www.roche.com, n.d.)

Problem Statement:

This mobile application solves the problem of accessing health information to all segments of kidney patients which access to health information to a less educated and segment. It saves time and effort for the kidney patient by avoiding an increase in the severity of the disease that mean knowing the kdney patient's information and following advice helps in recovery and reduces the severity of the disease. This saves time and effort by not going to the health institution. It also reduces attendance to primary health institutions except when necessary. It contributes for reducing the spread of Infectious disease by following and Knowing the tips and health instructions. It helps for changing the wrong behaviors of individuals that lead to some diseases. There are challenges facing Kidney Patients., such as spreading false information about ways to prevent some diseases, adopting wrong habits and beliefs, and spreading rumors between individuals in Kidney Patients. Kidney disease progresses in several stages, after which the patient resorts to dialysis or a kidney transplant. Therefore, these tips represent a role for decrease advancement of kidney disease.

Research Questions:

Q1- Do you think that health awareness, including tips and instructions through a mobile phone application, contributes to promoting health?

 Q2- Does the application of health education for kidney patients contribute to reducing the severity of the disease?

Q3- What are the benefits of applying health awareness in the life of a kidney patient?

Q4- What are the negatives of using the health awareness application for kidney patients on a mobile phone?

Literature Review:

(Hussein et al. 2021) This paper explains role of mobile health in health care. It examines the status and correlate of mobile health readiness among individuals on dialysis. The method of this study is by doing survey. The survey consists of 30 items of questions which distributed to individuals on dialysis from 21 in center hemodialysis facilities and 14 home dialysis centers. The result of this survey is 81% owned smartphones and the majority 70% reported intermediate or advanced mobile health proficiency. The main reasons for using mobile health were appointments 50% and communication with health care personnel 56%. Mobile health proficiency was lower in older patients compared with the 45 to 60 years' group.

(Li et al. 2020) This paper aims to evaluate the effectiveness of wearable devices, a health management platform, and social media at improving the self – management of CKD with the goal of establishing a new self – management intervention model. The method of this study is in 90 days. A total of 60 people with CKD at stages 1 – 4 were enrolled in the intervention group (n = 30) and control group (n = 30). All participants maintained dietary diaries using a smart phone app. Participants self – efficacy and self – management questionnaire scores, kidney disease quality of life score, body composition, and laboratory examinations before and after the intervention were compared between the intervention and control groups. The result shows after intervention group showed significantly higher scores for self – efficacy and also kidney disease quality of life scores were also higher in the intervention group.

(Li et al. 2020) In this paper 2020 the world kidney day campaign highlights the importance of preventive interventions be it primary , secondary or tertiary .This complementing article focuses on outlining and analyzing measures that can be implemented in every country to promote and advance CKD prevention .While national policies and strategies for non – communicable diseases might be present in a country , specific policies directed toward education and awareness about CKD screening , management and treatment are often lacking .There is an urgent need to increase the awareness of the importance of preventive measures throughout populations, professionals, and policy.

(Bach and Wenz 2020) This paper made it clear that many people use the Internet and applications that help them understand their feelings and health. This is by knowing the symptoms of the disease, how to treat it, and searching for how to live a healthy life. This research was done for 1959 users of the Internet and smart phone applications. The results appeared. Women, young users, college-educated users and non-smokers are the most frequent users of the Internet and mobile phone applications for health-related purposes. The number of health applications in the App Store is estimated at about 90,000 in the United States. One in five smartphone owners use a health app. In 2012, one in four US citizens uses a health app in 2019.These health mobile application help them improve self-reflection, change behaviors, track physical activity, and change eating and physical activity habits.

PubMed Labs 2019) In this paper aims to estimate overall for assessed mobile apps designed to help medication compliance and nouristiment tracking for possible use by CKD and ESRD patients. The methods used in this paper by search, screening and assessment of apps identified and download from ios and android app stories. It is selected by using 13 relevant search terms. The result of this study identified 2 general weaknesses in the existing the apps fell short of accommodating advanced interactive features such as providing motivational feedback and promoting for family member and caregiver participations in the app utilization.

(Siddique et al., 2019) In this study systematically cataloged and assessed mobile apps designed to assist medication compliance and nutrition tracking that are useful to the chronic kidney disease (CKD) and the end – stage renal disease (ESRD) patients who are on dialysis. The method is used in this study by screening, assessment of apps identified and downloaded from the ios and Android app stores. It is selected apps using 13 relevant search terms and then used the mobile app rating scale then used MARS.

(Emmanuel and AWR 2018) Study this paper on how to bridge the gap between society and health services. By developing a mobile application for health workers. This application allows sending the report, transferring knowledge, sharing information and receiving training via the user interface. It also explained some of the challenges facing the application The mobile phone in middle or low-income countries, such as limited internet, lack of organization, incomplete jobs, insufficient training, lack of supplies and necessary resources, as well as the benefits of using mobile technology, including that it is considered a reliable way to collect data, send and receive data, and help them In making a weekly report and exchanging information, alerts and reminders.

(Kayyali, Peletidi, Ismail, Hashim, Bandeira and Bonnah 2017) This paper aims to present the importance of mobile health by pharmacists and public perceptions of mobile health applications. It conducted a series of questionnaires between 2012 and 2014 for pharmacists and the general public. The result was 56% of pharmacists with knowledge of applications and 76% of the public own smart phones Health and lifestyle applications were more commonly used by the public. Likewise, this paper explained that it is useful health applications and the audience agreed that it helps them lead a healthier lifestyle and enjoy great potential in health promotion. This paper discusses some of the barriers for users of health applications. Such as lack of awareness, lack of time and limited jobs available.

(Peng, Kanthawala, Yuan and Hussain 2016) In this paper, the elements of design and content were examined and the type of health applications that facilitate or impede the use were examined. In this paper, 6 groups, 5 individual interviews, and 44 smartphone owners from the general public were conducted. This research presents the challenges and opportunities for health applications. The results are provided to researchers and application designers and health care providers. This paper has shown that there are more than 97,000 health-enhancing applications. These applications include patient diagnosis and lifestyle management. These applications also aim to promote health and

wellness and prevent disease for the general public. This paper also explained Obstacles to adopting health applications such as low awareness of health applications and lack of time and effort. This research recommends future mobile and application-based health that focus on changing behavior.

(Silva,Rodrigues,Diez,Lapez-Coronado,and Saleem 2015) In this paper, explain the role of information technology, including mobile applications, in addressing emerging problems in health services, including the increasing number of chronic diseases related to lifestyle and the contribution of patients and families to self-care. This study reviewed 117 articles published between 2002 and 2012.This paper contributes to the study of developments and penetration on mobile health. It also shows the use of mobile application services in health awareness. This paper concludes that mobile health services and applications have a strong impact on all health care services and improving the patient's life.

Research Data Collection

In this study is used quantitative and qualitative methods for collecting information. It has different methods like online interview, mail, survey, telephone, documentations, and websites. All methods of data collection are done by online because current condition of COVID-19.

Survey

The survey examines opinions of Kidney doctors, Kidney nurses, and Kidney patients for using Awareness Health for Kidney Patients mobile application. But because now difficult current condition only doing with 26 person of Kidney doctors and Kidney nurses who response for survey.

Findings:
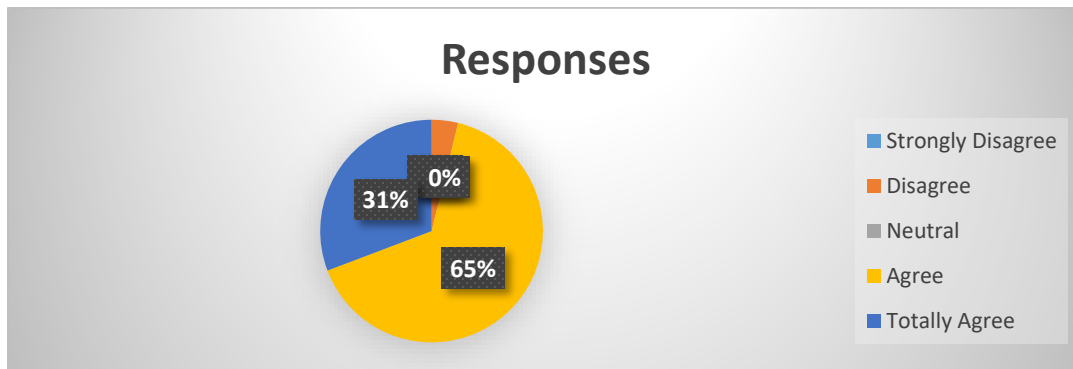
The 17 participations in survey are agree for tips and instructions through mobile application. The 8 of participations are totally agree for tips and instructions through mobile application. The 1 of participations are disagree for tips and instructions through mobile application.
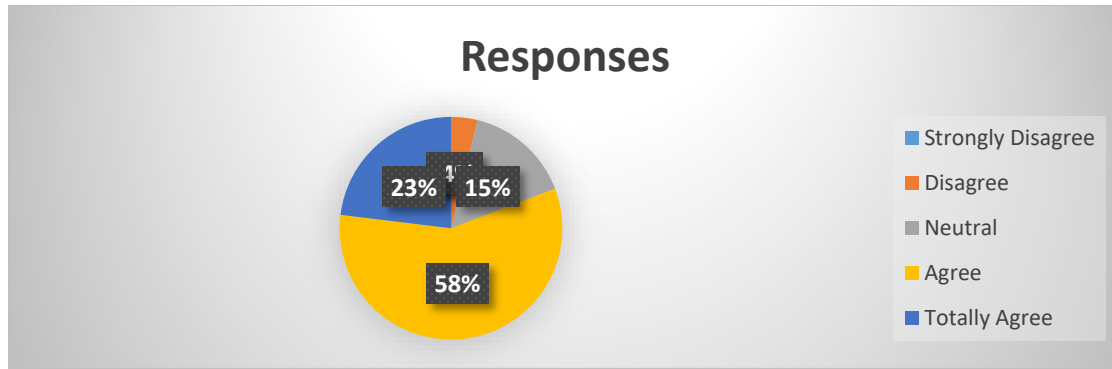
The 4 of participations are neutral for mobile application of awareness health for reducing severity of disease. The 15 of participations are agree for mobile application of awareness health for reducing severity of disease. The 6 of participations are totally agree for mobile application of awareness health for reducing severity of disease. The 1 of participations are disagree for mobile application of awareness health for reducing severity of disease

The benefits of applying health awareness in the life of a kidney patient are

➢ They will know how to handle their cases even at home and will help to promote and improve their health.
➢ Increase quality of life
➢ Sharing information and advice, as well as strengthening and supporting the health aspect of   patients with kidney failure
➢ It contributes to reducing the complications of the disease and live with this disease
➢ Improving health care, avoiding many harms resulting from misunderstanding or ignorance!!
➢ He acquires information about his health condition and helps him to live with his chronic illness
➢ It contributes to answering any inquiries about the patient's kidneys
➢ He or she can complain to treatment more and more and follows all instructions in their life

The negatives of using the health awareness application for kidney patients on a mobile phone are

❖ The presence of enormous information and general advice only without organization or focus.
❖ Not all patients are able to follow the phone.
❖ The timing of sending messages to everyone may not fit.
❖ It may cause the patient to be reminded of his illness even when he is outside washing time.
❖ Not all categories are suitable for using the application, for example, elderly people.
❖ There are no negatives if it is used properly.
❖ Not all pts have smart phone and can not down load this app in their phones.
❖ Not every patient has enough awareness to use mobile applications like the elderly and uneducated patients.
❖ Some patients do not deviate from reading and do not have smart phones, so they do not benefit from the application.

Research Methodology

In this awareness kidney health mobile application, agile methodology is quick and iterative. The tasks are divided into short phases of work, frequent assessment and adaptation to plans. It is for mobile application, frequent update, and ability to quick download. It helps to create apps that are seamless, quick, small is size and easy to work. It is more stable with fewer errors and increasing quality. It can add new features in app and submit all phases from designing to development, testing, and delivery. The benefits of agile mobile app are reduced risks, faster development, better quality, seamless project management, enhanced customer experience, and customization. The principles which depend for agile are quick reply to any changes with help of adoptive planning, common preparation of requirements, justification of tasks performed by development team, and step by step software development with rigorous time frames.
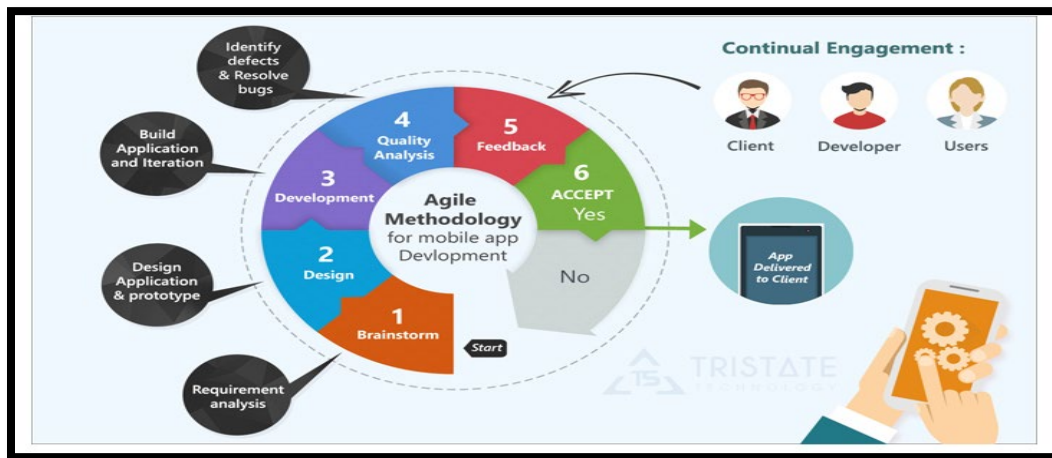

Figure 1: Agile Methodology

Research Design or Prototype / Framework

Figure 2: Home page Screen

In home page screen, the interface of this screen contains image of icon of ministry of health, label of name of application, image of kidney clinic. It contains textbox of email and textbox of password. User can enter with application by email and password. It has three buttons are login, register, and forget password.

Figure 3: Registration Form Screen

In this registration form screen contains name textbox, email textbox, password textbox, and phone textbox. User register by entering details such as name, email, password, and phone. And it has another button of already signed in? Login here to login application after registration.

Figure 4: Awareness Topics Screen

In Awareness Topics Screen has title label and 8 topics buttons when press in each button go to other screen. Also, it has another button for logout.
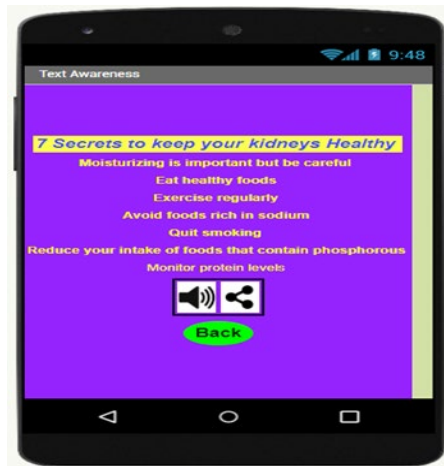
Figure 5 Text Awareness Screen

In this screen, the user can listen and share the text, and button to back to awareness topics screen. Also, back button to return to Awareness Topics Screen.
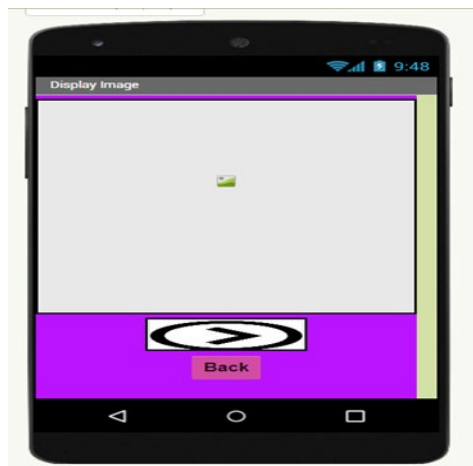

Figure 6 Display Image Screen

In this screen contains image for displaying image and button to press for changing image to move to another image.
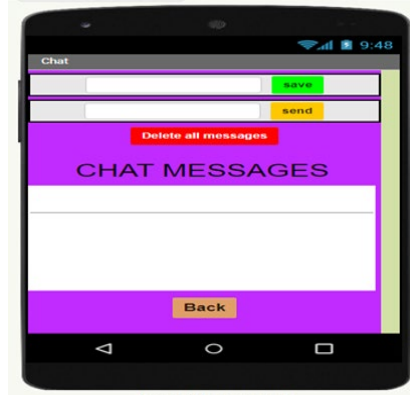
Figure 7 Chat Screen

In chat screen contains textbox for name and textbox for text message. It contains button for save, button for send, and button for delete all messages. The user can enters in first field name then press save button. In second field the message text after that press send button which appears in chat messages. Back button is to return to awareness topics.
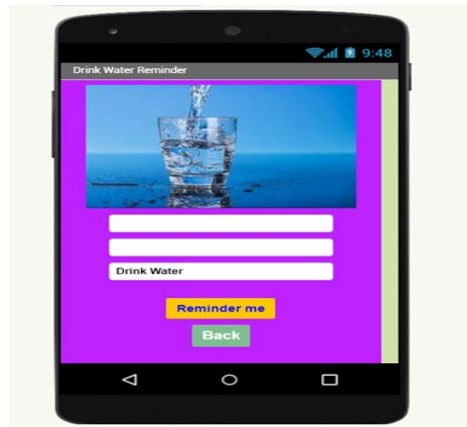

Figure 8 Drink Water Screen

In drink water reminder screen contains image of drink water. User enters in first field how many times will drink and second field enters after which hour will reminder to drink. When presses reminder me button will set hour. And when press back button will open awareness topics screen.

Conclusion & Recommendations:

Mobile application of awareness Kidney health for kidney patients is mobile technology which serves to facilitate for publishing awareness kidney health between patients and avoid increase problem of kidney health. It helps for reducing pressure on health services of dialysis unit. It helps for reducing financial expenditures on health services. This application is small environment between kidney doctors, kidney nurses, nutritionist and kidney patients. It can send chats and video calls between doctors, patients, and nurses. It helps doctors for delivering kidney health awareness for kidney patients. It can save note observation for readings of Pressure, Sugar, and Kidney Filtration Rate. It can timer for sport which can start, pause, and reset. It can drink water reminder and set clock to reminder when drink water and in which time. It helps for changing some behaviors and practices for kidney patients. It supports health for kidney patients.

During planning for designing mobile application of awareness kidney health for kidney patients must analysis for hardware, software, and manpower requirements. Also, it analyses cost analysis for each of hardware, software, and manpower. It identifies excepted risks of mobile application awareness kidney health. Agile methodology is suitable for designing awareness kidney health for kidney patients because needs same stages for analyzing requirements, designing, iteration of development, quality analysis, feedback, and accept of application. The collection methods of this application are used primary resources from kidney clinic and secondary resources like online survey, internet websites, and books. It is doing project plan for each tasks when start and when finish. Also, in designing specifies use cases diagram, class diagram, ERD diagram, data dictionary, and content diagram. In implementation stage for this application is using MIT Inventory application. Also, it is done for testing application for defining where error and fix it. And, it deploys application and takes feedback for this application.

I recommend using the mobile phone to facilitate the dissemination of awareness for all kidney patients and to help kidney patients to drink water by setting an alarm and doing sports through the digital counter. The mobile application is also considered as a micro-environment between doctors, nurses and nutritionists that allows them to send chats and video calls.

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