

Mobile Application Design for Blood Pressure Management using Traditional Korean Medicine Contents

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1. Introduction

Hypertension is a leading cause of cardiovascular disease which accounts for 25% of all death. Health experts around the world emphasize that ongoing prevention effort is needed in order to prevent progression to hypertension. The Basic concepts of Traditional Korean Medicine(TKM) is to prevent disease through body and soul management. TKM provide personalized treatment which depends on the patient's environment and cause of illness. Also TKM has a variety of lifestyle interventions such as herbal tea, medicinal food, meditation, qigong, etc. Therefore TKM is suitable for hypertension management in which is important to prevent[1]. Because needs of saving medical costs and social interest of well-being, smart healthcare in management of blood pressure was launched recently[2]. Many people tend to rely on a number of mobile app for health management by the explosive prevalence of the smartphone. However, blood pressure control using the concept of TKM preventive maintenance in smartphone apps have not been tried yet. The subject of this study is the design of mobile apps which user can monitor status and be able to get health information about TKM contents of "Development of preventive management information system for high risk group of hypertension" project.

2. Building TKM contents about prehypertension

We searched the content of hypertension study through OASIS web site and summarized herbal treatment for high blood pressure[3]. Also we collected the clinical data of 250 cases such as blood pressure, gender, age, smoking status, family history, blood lipids, obesity, exercise, lifestyle habits, stress through clinical trial. These data is classified several groups according to TKM concept as Sasang- constitution, cold/heat/deficiency/excessive, phlegm/stagnation and so on. And we made qigong video program suitable for the prehypertension people.

3. Functional analysis of hypertension App

We analyzed the functions and features of mobile applications in Google and Apple application store about 59 cases related hypertension care.

[Table 1] Functional Analysis of blood pressure management app

Function	offer	some offer	N/A	description
Record	59(100%)	0	0	record the blood pressure value and show the accumulated figures
Graphic view	57(97%)	0	2(3%)	schematic view of systolic and diastolic blood pressure and heart rate trend using a line graph
Memo	20(34%)	7(12%)	32(54%)	input the additional information such as the measurement of the physical state
Reminder	12(20%)	0	47(80%)	provide notification to allow for blood pressure measurement using a smartphone's alarm
Export	34(58%)	4(7%)	21(35%)	transfer the data stored in a form in order to show the family and health care professionals
Information	2(3%)	7(12%)	50(85%)	offer the treatment or prevention method for user to adjust their own blood pressure

4. Design the scenarios for providing TKM contents

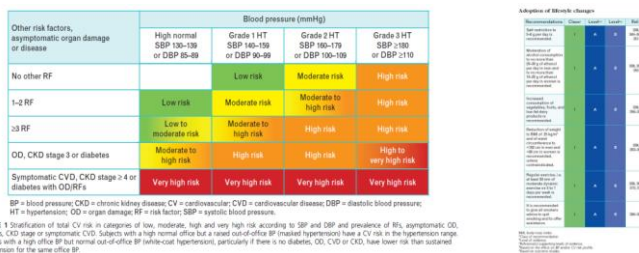


Figure 1. Risk factor classification and lifestyle management information

We decided that our app have six major functions same as apps listed in the App Store. As the primary purpose of our app will support the health care, User fill out not simple BP value but personal information and inspection information with E-CRF which applied to clinical trials at the stage of recording. The constitution, the stress, cold/heat/deficiency/excessive information is automatically generated using user’s input data. The app determines the user’s level using these data and provides adequate lifestyle management content to right group[4]. In next stage user can confirm his constitution through E-CRF constitution diagnosis questionnaire and check specific food and exercise to user’s constitution. Also app which has data analysis algorithms about classification cold/heat/deficiency/excessive, phlegm/stagnation and so on provide herbal tea, acupressure methods, exercise, and therapy as lifestyle management methods. At the end of the cohort study, our program will serve prediction information how the survey results could be changed. We aim to provide not only lifestyle management information but also TKM treatment information.

5. Conclusion

In national and international studies on hypertensive patients, it was published that self-management tool was effective in the management of hypertension and increased person’s satisfaction[5][6]. DASH which is diet program for high blood pressure by adopting education and self-management is also significant effect on blood pressure on the domestic population study[7]. We started this research with concept which TKM is effective for preventive maintenance. As a result, Our goal is to develop and deploy the blood pressure prevention and management app which can provide TKM information for managing risk factor in order to decrease prevalence rate forward hypertension and providing personalized TKM treatments to hypertension group. Particularly in terms of the information, there is an undeniable distinction between our app and other apps in store. For dissemination of TKM content with user-friendly, we first analyzed the existing BP management app in distribution channels and defined needed functionality. Second we conducted for the design of service scenario about TKM content with utilizing the already obtained data. We will divide into steps 1 and 2 to proceed with plans to develop app according to the degree of accumulation data. Because the app is related to healthcare, it is the most important that provide the right information. Thus we plan to proceed with so many field test.

6. References

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