Identifying Requirements of a Self-care System on Smartphones for Preventing Coronavirus Disease 2019 (COVID-19)

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ABSTRACT

Background: Smartphone applications play a pivotal role in management, providing care and preventing infectious diseases. It also has the potential impact on supportive and self-care. This study aimed to identify the requirements for a smartphones self-care system to prevent corona-virus (COVID-19).

Materials & Methods: This was a descriptive study performed in two main stages in 2020. At the first stage, to recognize the requirements for a smartphones self-care system, similar articles were searched and identified. In the second stage, the identified requirements were validated through a researcher-made questionnaire. The sample size of the study consisted of infectious diseases specialists of Urmia University of Medical Sciences. The collected data was analyzed using descriptive statistics (mean and frequency).

Results: Requirements of the self-care system were identified in four areas: "demographic data, clinical requirements, self-care strategies, and technical characteristics". Also, according to the research community, 5 data elements for demographic data, 11 data elements for clinical requirements, 5 data elements for self-care strategies, and 11 data elements for technical characteristics were selected.

Conclusion: Applying the requirements and suggested strategies in the present study can improve self-care skills to prevent corona-virus, symptoms management, motivate and reduce stress, increase personal hygiene and communication with health care providers.

Keywords: Self-care, Smart phone, Corona-virus (COVID-19)

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Introduction

Self-care is a practice in which people use the knowledge, their skill and ability as a resource to maintain and improve their health (1). Self-care is a laborious process that requires time and energy to perform the action. Implementation of this action depends on the internal (cognitive, physical, emotional and behavioral) and external (environment and society) capacities (2,3). Self-care is one of the emerging operational strategies for the management and prevention of communicable infectious diseases. According to research, it results in increased energy and positive emotions, reducing stress, physical health feeling, increasing the self-confidence and enthusiasm and consequently, could improve the level of health of the community (4-7). According to the findings of similar research greater awareness of communicable diseases leads to better self-care (8,9). Several articles in different countries have focused on the use of smartphones self-care software for the management of communicable infectious diseases (10,11). Self-care is a voluntary activity that performs to provide, maintain and promote a healthy community (12). Therefore, Self-care includes activities that are applicable by each person (13) and could cause continuous assurance and long-term follow up of self-care activities (14).

Given the prevalence of corona-virus disease (COVID-19) as a chronic disease and the importance of self-care in its prevention, providing self-care services can be an important achievement for the community and also given the widespread use of smartphones software and the low-cost of this technology, the use of smartphones self-care system is increasing in this area (15).

In addition to save time and expenses, it has an important role in managing and providing care for the prevention of corona-virus (COVID-19). In recent years development of smartphones software has led to the application of this software in a variety of health areas (16). Using this software has been a considerable help in management and prevention of chronic and communicable diseases in developed countries (17,18).

Due to the lack of self-care software for the management and prevention of infectious diseases and lack of self-care software to prevent corona-virus disease (COVID-19) in Iran it is important to address this issue.

The purpose of this study was to identify the requirements for a smartphones self-care system to prevent corona-virus (COVID-19).

Materials and Methods

Search strategy and study selection

This descriptive study was conducted in two stages in the year 2020. The first stage of the study focused on identifying requirements of smartphones self-care system for coronavirus disease 2019 (COVID-19). The keywords Mobile, Self-care, Mobile health, Prevention Requirements, Minimum data set Self-Management Strategies, Smart Phone, corona-virus disease 2019 (COVID-19) and Acute disease were searched using AND operators in databases of PubMed, Scopus, the web of Science, science direct, Google Scholar and ProQuest. Review and original articles with self-care, corona-virus and corona-virus (COVID-19) topics published between 2001 and 2020 were checked. According to the mentioned criteria, we tried to gather as many articles as possible. A total of 246 articles were identified of which 195 were eliminated due to lack of inclusion criteria, being repeated or overlapped. Finally, 30 articles were selected (15, 16, 18-45).

In the second stage, using obtained data while checking similar articles, a questionnaire was designed for validation and choosing the requirements for designing a smartphones self-care system to prevent Corona-virus infection. The questionnaire included 4 parts and 56 questions (Demographic data; 8 questions, Clinical requirements; 12 questions, Self-care strategy and Technical characteristics; 12 questions) and it was designed based on five degrees Likert scale (from totally agree to completely disagree). The reliability of the questionnaire was calculated as 0.85 by Cronbach’s alpha coefficient. The software’s validity was also verified by infectious diseases specialists and health information management professors. The current research sample size has consisted of infectious diseases specialists, experienced nurses in patient education who were occupied in Urmia University of Medical Sciences that due to sample size limitation, the sampling process was not performed and the whole of the individuals were included in the study (22 individuals). Inclusion criteria were personal satisfaction, volunteering and completing all the questions in the questionnaire, and answering the questionnaire incompletely or incomplete answers were considered as cases of removing people from the study. The questionnaire was distributed between individuals and 20 questionnaires were collected after fulfillment. At this stage, the questionnaire’s choices were scored from 1 to 5 (Totally agree: 5, I agree: 4, I don’t think: 3, I disagree: 2, and I completely disagree: 1). Then, each of the identified data elements and attributes were considered to be significant only if the infectious disease specialists had achieved at least a mean of 2.5 or more. Finally, the mean values given to each data element were calculated and the related descriptive tables were drawn. Data was analyzed using SPSS software version 22 (SPSS Inc., Chicago, Ill., USA).

Results


Based on the findings of the first stage of the study, the requirements for a smartphones self-care system for the prevention of corona-virus (COVID-19) were determined in the area of "demographic data requirements, clinical requirements, self-care strategies, and technical capabilities." According to the findings of the first step, 13 data elements were identified to design a smartphones software system to prevent corona virus disease (COVID-19). They concluded that in designing and operating a smartphones self-care system for the enrollment of their full demographic information should be considered (46). A total of 11 data elements were also selected according to the infectious diseases specialists in the clinical field, which was in agreement with the result of the study by Jank JG et al. They concluded that the most common clinical symptoms of corona-virus (COVID-19) patients are fatigue, cough, fever, and digestive symptoms (20,21). In the self-care strategies context, 5 data elements were selected according to the specialists that were consistent with the research by Fernandez et al. They supported the children's self-care and their families suffering from a contagious infectious disease that self-care strategies have been achieved included evaluations, counseling, care and accompaniment (47). Similar researches emphasizing on self-care strategies for acute and chronic conditions have highlighted the importance of improving the lifestyle of self-care programs, which could help to ameliorate their health status and increase their motivation and ability to participate in treatment plans (48,49). The Table 1. Requirements for self-management system and average scores assigned by specialists

| Demographic data | Self-care strategy | Clinical requirements | Technical characteristics |
|------------------|--------------------|-----------------------|--------------------------|
| Age              | Motivate Yourself (Thinking Positive) | Dry and frequent coughing | Communication with health units (remote monitoring) |
| Gender           | Personal hygiene   | difficulty breathing   | Educational messages     |
| Location         | Exercise           | Ague                  | Contact with doctor      |
| Tel. number      | Healthy diet       | Sore throat           | Get news from valid sources |
| BMI              | General recommendations | runny nose           | Diet reminder           |
|                  |                    | Tiredness and weakness | Exercise reminder       |
|                  |                    | joint's pain          | Motivational message    |
|                  |                    | Diarrhea              | Text messaging          |
|                  |                    | Nocturnal sweat       | Security Requirements   |
|                  |                    | Pneumonia             | online                  |
|                  |                    | Weight Loss           | User-friendly           |

Discussion

Based on obtained results from the first stage of the present study, four demographic areas (with 5 data elements), Clinical requirements (with 11 data elements), Self-care strategies (with 5 data elements), Technical characteristics (with 11 data elements) were identified to design a smartphones software system to prevent corona-virus disease (COVID-19).

According to the infectious diseases specialists, 8 data elements were selected in the present study for the demographic area that was consistent with the results of Nematomalli et al.

They concluded that in designing and operating a comprehensive information management system for chronic and acute diseases the mechanism of enrollment of their full demographic information should be considered (46). A total of 11 data elements
technical characteristics area was completed with 11
data elements selected by infectious disease
specialists. In a similar study, Henry and Moore
illustrated that the smartphones self-care could be
fruitful in this context through present punctual
reminders and people participation in related
activities (50).

**Conclusion**

The study was conducted to identify the
requirements of a mobile-based self-care system to
prevent COVID-19. The results of the research
indicated that the data elements of communication
with health and medical units (remote monitoring),
educational messages, communication with the
doctor and receiving news from reputable sources
are among the technical requirements with a very
high range and an average of 5. These have drawn
the research community's attention to the
importance of technical requirements which could
be an important requirement to prevent COVID-19.
Dry and frequent coughing, shortness of breath,
fever and chills were other very important data
elements with a very high spectrum and an average
of 5 among the important and significant clinical
requirements of the research community. It should
be noted that the weight loss element with an
average of 3.7 of the set of clinical requirements
elements had the lowest average and the rest of the
data elements of all identified requirements had an
average above 3.7, which shows the high importance
of each of these data elements.

Applying the requirements and suggested strategies
in the present study can improve self-care skills to
prevent corona-virus, symptoms management,
 motivate and reduce stress, increase personal hygiene
and communication with health care providers.

**Suggestions:** It is recommended to perform future
investigations to develop and evaluate self-care
system to prevent corona-virus (COVID-19).

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and staff of the Virology Research Center of Masih
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**Conflict of Interest**

Authors declared no conflict of interests.
شاخص‌سازی الزامات سامانه خود مراقبتی مبتینی بر گوشی همراه هوشمند برای پیشگیری از ابتلا به ویروس کرونا (کووید-19)

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چکیده
زمینه و اهداف: برنامه‌های کاربردی کوئینکی، یک همراه هوشمند نشان می‌دهد که در مدیریت ارزش‌های مبتینی از ابتلا به بیماری‌های عفونی و اگزیک، با این ازار پیشگیرانه از این مراقبت‌ها حمایت کرده و جسد را در داده‌های گرفته و دارای ویروس کرونا (کووید-19) باشد.

مواد و روش کار: این مطالعه بر روی نوع توصیفی بود که در سال 1398 در دوره مراحلی انجام گرفت. در مراحلی اول، نظارت و تغییرات این مراقبت‌ها از ایزو‌گرافیک، ارزش‌های بیماری، راهنما و دریافت کرده و دارای داده‌ها مبتینی از ابتلا به ویروس کرونا (کووید-19) باشد.

یافته‌ها: ارزش‌های مبتینی از ابتلا به ویروس کرونا (کووید-19) در مراحلی اول، نظارت و تغییرات این مراقبت‌ها از ایزو‌گرافیک، ارزش‌های بیماری، راهنما و دریافت کرده و دارای داده‌ها مبتینی از ابتلا به ویروس کرونا (کووید-19) باشد.

نتیجه‌گیری: کاربرد از ابتلا به باعث برگزاری دانش‌ورزشی و ارزش‌های بیماری، راهنما و دریافت کرده و دارای داده‌ها مبتینی از ابتلا به ویروس کرونا (کووید-19) باشد.

کلمه‌های جامع: خود مراقبتی، گوشی هوشمند، ویروس کرونا (کووید-19)

گزارش نگاره مجله میکروب شناسی پزشکی ایران: جامعه‌ای که در دانشگاه ایران می‌تواند باعث در دانشگاه ایران می‌باشد، خود مراقبتی عملی است که در آن هر فردی از دانش‌های مهم و توان حفظ در راستای حفظ و بهبود سلامت خود استفاده می‌کند. خود مراقبتی عملی پژوهشی است و به زمان و انرژی نیاز دارد. اجرای این عمل به توانایی و ظرفیت‌های داخلی و ساختاری، جسمی، عاطفی و رفتاری خارجی (محيط و
روش پژوهش

این پژوهش از نوع توصیفی-تخمینی به‌کارگیری گردید. در میانگین افراد مصاحبه‌کننده، تعداد سال‌های زندگی، بیماری‌ها و عوامل مربوط به آنها گزارش گردید. در این پژوهش، اطلاعات مربوط به شاخص‌های سلامتی و بیماری‌های مرتبط با کرونا از منابع مختلف جمع‌آوری شده و برای ارزیابی یافته‌ها تحقیق انجام شد. در نهایت، نتایج مورد بررسی قرار گرفت و بر اساس آنها، نتایج تخمینی و توصیفی مشاهده گردید.

کلیدواژه‌ها: پژوهش، تجزیه و تحلیل، شاخص‌های سلامتی، بیماری‌ها، کرونا.
پژوهش‌ها

بر اساس پایه‌های مرحله اول پژوهش، الزامات مورد نیاز سامانه خود مراقبتی مبنی بر مویابی برای پیشگیری از بیماری کرون اوراسیا (کووید-19) در جوزه الیزه داده‌های دموگرافیک، الزامات بالینی، راهبردهای خودمراقبتی و قابلیت‌های فنی تعمیم گردید. مطلق با پایه‌های حاصل از مرحله اول، ۱۳ عنصر داده‌ها<br/>

نمونه‌های الزامات مورد نیاز سامانه خود مدیریتی و میانگین نمرات اختصاص داده شده توسط متخصصان

| عنصر
| میانگین | الزامات مداوم
|---------------------------------------------------------------|
| راهبردهای خودمراقبتی | میانگین | داوطلبانه، فعال و فنی | ارتباط با واحدهای پزشکی و درمانی (پایش از راه دور) | بین ۵ ۴ ۳ ۲ ۱ | ۵ | ۴ ۳ ۲ ۱ |
| گلو درد | ۴ ۳ ۲ ۱ | پایان پزشکی | دریافت اخبار از سمت مربی | ۴ ۳ ۲ ۱ |
| آب و انرژی | ۴ ۳ ۲ ۱ | یادآوری رژیم غذایی | ۴ ۳ ۲ ۱ |
| خستگی و بی حالت | ۴ ۳ ۲ ۱ | یادآوری انرژی | ۴ ۳ ۲ ۱ |
| درد مفاصل | ۴ ۳ ۲ ۱ | نیاز به پزشکی | ۴ ۳ ۲ ۱ |
| اسکلر | ۴ ۳ ۲ ۱ | تب و افزایش | ۴ ۳ ۲ ۱ |
| تعریق بدن | ۴ ۳ ۲ ۱ | افزایش رطوبت | ۴ ۳ ۲ ۱ |
| دندان | ۴ ۳ ۲ ۱ | کاربردی بودن | ۴ ۳ ۲ ۱ |
| کاهش وزن | ۴ ۳ ۲ ۱ | تجویز | ۴ ۳ ۲ ۱ |

بحث

داده‌های جهت طراحی سامانه خود مراقبتی مبتنی بر مویابی برای پیشگیری از ابتلا به بیماری کرون ایده‌آل - درصد شناسایی گردید.

بر اساس تحقیق حاضر، ۸ عنصر داده‌های طبق نظر متخصصان میانگین راهبردهای خودمراقبتی (با ۱۱ عنصر داده‌ای) و فنی (با 11 عنصر داده‌های خود مراقبتی) انتخاب گردید که با نتایج متفاوت: ۱ سپس هر یک از عنصر داده‌ای و ویژگی‌های شناسایی

شده تفاوت در صورتی که عنوان ویژگی مهم در نظر گرفته شد. که طبق نظر متخصصان بیماری‌های فوقانی، حداکثر میانگین ۲.۵ و بیشتر را گزاره از شده. در نهایت، میانگین ارائه‌های داده به هر عنصر اطلاعات محاسبه و چند توصیف مربوط به آن رسماً گردید. داده‌ها در نرم‌افزار spss مورد تجزیه و تحلیل قرار گرفت.
پژوهش نعمت الهی و همکاران مطالعه خود مراقبتی مبتنی بر گوشی همه‌شده‌م.

همدانی سعیدی‌نیا و همکاران | شناسایی از ازمات سامانه خود مراقبتی مبتنی بر گوشی همه‌شده‌م

دهنه‌دهی اهمیت بالایی توجه به ازمات فنی است و می‌تواند یک‌سر به‌مزایای مهربانی در برنامه‌ریزی همه‌شده‌م جویا باید به‌طور گسترده‌تر اعمال شود. سرفر و سرانجام درک خشک و مکرر جامعه بی‌پژوهشی از مهم‌ترین پیش‌بینی‌های ارزیابی‌های تحقیقاتی می‌باشد. از جمله ازمات بالینی مهم و جشنه‌گیر مورد توجه جامعه بی‌پژوهشی بود که توجه به این ازمات به‌طور صورتی است. لازم به ذکر است که این موضوع با میانگین 7/3 از مجموعه ازمات بالینی دارای میانگین بوده و نقیه عناصر ازماته‌ای از همه ازمات شناسایی‌شده دارای میانگین بالای 3/2 هستند که این امر نشان دهنده‌دهی اهمیت بالایی حکایت دارد از این عناصر داده‌است.

کاربرد ازمات و راهبردهای بی‌پژوهشی بسیار مهم در مطالعه‌های خطر مراقبتی می‌باشد. بی‌پژوهشی به ابتلا به کرونا (کوید-19)، مدیریت علائم، ابجود انجیره و کاهش استرس افزایش سطح بهداشت فردی و ارتقابت با ارائه دهندگان مراقبت سلامت گردید. بی‌پژوهشی

پیشنهادها

پیشنهاد می‌شود پژوهش‌های ایندی به‌طور تعمیمی و ارزیابی‌سازمان‌های خود مراقبتی برای بی‌پژوهشی از ابتلا به کرونا (کوید-19) بپردازند.

سیاست‌گزاری

بدین‌ویژه از کلیه استادان و کارکنان شاغل در مرکز تحقیقات و بیمارستان بیمارستان بیمارستانی محسوب می‌شود که در انجام این مطالعه باری نمودن، نشر و قدر دانی به عمل می‌آید.

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