Nutrition Assistant Application

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INTRODUCTION

Nutritional support is the provision of adequate nutrients to maintain a healthy body weight and avoid malnutrition. The continuous delivery of high-quality and cost-effective nutritional care to patients has been shown to be an increasingly difficult task. It is observed that dieticians are requested to carry out the nutritional assessment, to manually calculate the nutritional needs and to design the everyday meal plan for each patient. In most cases, these time-consuming tasks are not completed due to lack of time or inadequate number of personnel . Development of a computer assisted information tool with cloud-based on-line diet consultation module and comparison of its efficacy with one-to-one counselling would be efficiently utilized for client education intervention programs. The nutrient content calculation was planned to undertake with commonly consumed traditional as well as junk foods in Kerala; and the Indian Food Composition Table was the authenticated support tool, followed by nutrition education software for patient education in hospitals and clinics.

Cloud Computing

Cloud Computing is a kind of virtualization technology based on internet. In cloud computing, central remote server plays an important role for healthy data management and applications. It offers handsome efficiency in the field of Computing as well as Information Technology for providing centralized storage, money, processing, and bandwidth. Thus regardless of the size of the institute (i.e. big or small) there is no additional requirement for the establishment of own as well separate IT infrastructure for more and higher business units. Networking Technology and Internet Technology play a vital role in the establishment of cloud computing in different settings. Today it is treated as an emerging technology among the other applied Information Science & Technology. India is strong as well as developed in many senses with a good amount of educational institutes for diverse sectors and community. Cloud computing is applicable in a different field in the current scenario, such as Education, Public Administration, Business & Commerce, Health, and Medicine etc. Interestingly, cloud computing may be applicable in the field of Food and Nutrition. This is a conceptual paper deal with cloud computing related aspects which include benefits, advantages, challenges, and issues. Moreover, the paper also talks about cloud computing applications in different and diverse areas of Food Science, Nutrition and Dietetics. Further, the paper discusses some of the contemporary and future challenges to build Cloud Computing based Food Information Systems.

Measuring the Effect of Supplemental Nutrition Assistance Program (SNAP) Participation on Food Security

The aim of the Supplemental Nutrition Assistance Program (SNAP), which operates through the Food and Nutrition Services (FNS) of the United States Department of Agriculture (USDA), is to give individuals with low incomes access to food and, through education programs known as Supplemental Nutrition Assistance Program Education (SNAP-Ed), encourage low-income individuals to adopt healthful eating habits. In 2009, national participation in SNAP was at nearly 38 million people, an increase of over 22% from 1 year

prior. The increase in participation has driven program costs up considerably. Federal spending on SNAP has increased from $37 billion in 2008 to over $50 billion in 2009. As expenses continue to rise, the need to demonstrate that SNAP-Ed is reaching its stated goals becomes more evident. The effectiveness of SNAP-Ed projects, run through state-level organizations, is of particular interest with regard to evaluation needs. The SNAP-Ed program is a voluntary component of SNAP participation in which educational messages on dietary quality, food safety, and food resource management are delivered to low-income individuals. A 2004 report compiled by the US General Accounting Office concluded that data used to evaluate trends in the USDA's nutrition education efforts, such as SNAP-Ed, were not clearly associated with any particular program and that more effort was needed to determine whether behavior change in the targeted population is influenced by education or other factors.

To address concerns about evaluation of SNAP-Ed, FNS and state-level SNAP-Ed leaders have collaborated with the Society for Nutrition Education and Behavior to identify specific evaluation needs of SNAP-Ed programs and to determine the best strategies to meet these evaluation needs.[5] As part of this collaborative work, Guthrie et al have reported on 2 strategies that can enhance SNAP-Ed evaluations: identification of an appropriate theoretical model of behavior change and construction of measurement instruments that can be universally used as a program evaluation tool for SNAP-Ed initiatives.

A prescribed theory-based evaluation model and/or measurement instrument that fits all SNAP-Ed projects may be challenging to develop. State agencies have a great deal of flexibility in how SNAP-Ed can be delivered. Approximately 98% of implementing agencies include direct education in their SNAP-Ed projects, delivered by nutrition educators who work for or are contracted by the agency. Although most SNAP-Ed nutrition educators use FNS materials for nutrition education, some develop their own or use a wide variety of other resources. These materials are likely addressing a variety of behavioral determinants from several theories, which demands individualized evaluation plans. However, most SNAP-Ed implementing agencies do not feel they have a reliable evaluation model in place, believe it would be difficult to design an evaluation instrument, and do not feel they have sufficient resources for evaluation efforts.[7] Moreover, practitioners delivering the education bring “real world” concerns about evaluation of SNAP-Ed projects. As Taylor-Powell cautions, educators may be skeptical or uncomfortable with the complex inquiry into the particulars of their programs.

Considering the issues surrounding rigorous and consistent SNAP-Ed evaluation, taking into account steps to addressing practitioners' concerns about evaluation, and making use of suggested methodologies for SNAP-Ed evaluation,9, 10 the preliminary steps of a program-specific evaluation model, grounded in behavioral theory and supported by validated measurement, were tested in this study. The evaluation model was incorporated into the SNAP-Ed program, Just Say Yes to Fruits and Vegetables, run by the New York State Department of Health in collaboration with the Regional Food Bank of Northeastern New York. The program follows the national SNAP-Ed guidelines to provide education to low-income individuals on how to plan, buy, and prepare healthful meals that

include fruits and vegetables; the program also reports analyses of behavioral mediators to FNS as measures of program outcomes. The program received FNS approval to offer education to parents at Summer Food Service Program (SFSP) sites in 2008.

As this was a new audience and setting for the program, a needs assessment was conducted for SFSP sites in New York State. The results of the needs assessment suggested that the curriculum should focus on specific constructs from the Transtheoretical Model (TTM), which includes decisional balance (the relative significance placed on perceived benefits and barriers of behavior change) and self-efficacy (confidence one has in his or her ability to change). Specifically, perceived benefits and barriers of eating fruits and vegetables and self-efficacy regarding eating more fruits and vegetables were issues identified as facilitators or inhibitors of eating fruits and vegetables through focus groups with parents at the SFSP sites. Additionally, associations have been found between these constructs and behavioral change in similar studies of SNAP-Ed programs. In this study, the psychometric properties of a survey designed to evaluate TTM mediators of behavior change were first examined. Additional processes of change and other constructs from the TTM were not included, as these were not identified in the formative research or feasible to include. Data collected with this survey were then used to assess the application of the TTM to evaluation of this program.

The concept of smart healthcare

Smart healthcare was born out of the concept of "Smart Planet" proposed by IBM (Armonk, NY, USA) in 2009. Simply put, Smart Planet is an intelligent infrastructure that uses sensors to perceive information, transmits information through the internet of things (IoT), and processes the information using supercomputers and cloud computing. It can coordinate social systems and integrate them to realize the dynamic and refined management of human society. Smart healthcare is a health service system that uses technology such as wearable devices, IoT, and mobile internet to dynamically access information, connect people, materials and institutions related to healthcare, and then actively manages and responds to medical ecosystem needs in an intelligent manner. Smart healthcare can promote interaction between all parties in the healthcare field, ensure that participants get the services they need, help the parties make informed decisions, and facilitate the rational allocation of resources. In short, smart healthcare is a higher stage of information construction in the medical field.

Key technologies of smart healthcare

Smart healthcare consists of multiple participants, such as doctors and patients, hospitals, and research institutions. It is an organic whole that involves multiple dimensions, including disease prevention and monitoring, diagnosis and treatment, hospital management, health decision-making, and medical research. Information technologies, for example, IoT, mobile Internet, cloud computing, big data, 5G, microelectronics, and artificial intelligence, together with modern biotechnology constitute the cornerstone of smart healthcare. These technologies are widely used in all aspects of smart healthcare. From the perspective of

patients, they can use wearable devices to monitor their health at all times, seek medical assistance through virtual assistants, and use remote homes to implement remote services; from the perspective of doctors, a variety of intelligent clinical decision support systems are used to assist and improve diagnosis. Doctors can manage medical information through an integrated information platform that includes Laboratory Information Management System, Picture Archiving and Communication Systems (PACS), Electronic Medical Record, and so on. More precise surgery can be achieved through surgical robots and mixed reality technology. From the perspective of hospitals, radio-frequency identification (RFID) technology can be used to manage personnel materials and the supply chain, using integrated management platforms to collect information and assist decision-making. The use of mobile medical platforms can enhance patients' experiences, From the perspective of scientific research institutions, it is possible to use techniques such as machine learning instead of manual drug screening and to find suitable subjects using big data. Through the use of these technologies, smart healthcare can effectively reduce the cost and risk of medical procedures, improve the utilization efficiency of medical resources, promote exchanges and cooperation in different regions, push the development of telemedicine and self-service medical care, and ultimately make personalized medical services ubiquitous.

AI-based health assistant to help you stay fit

HealthifyMe's unique selling proposition is its AI-based voice assistant called Ria, which acts as a health coach and helps users in their fitness journeys.

Voice assistants are the highlight of the season, and fitness, talk of the town. So, what if there is a voice assistant, who could help you stay fit? Keeping a track of your health could be pretty challenging and while there are smart watches around to help you track your sleep, exercise, pulse rate etc., most of them don't take into account an important factor for staying healthy: Food. Keeping track of your food and nutrition being consumed, is a major headache for the fitness enthusiasts in the country, as most apps present in the space have been developed abroad and lack in-depth information about Indian foods. HealthifyMe, a Bangalore-based company, is trying to solve this challenge in the country.

Tushar Vashisht, co-founder and CEO, HealthifyMe moved to India in 2010 after his stint as an investment banker in the US and Singapore, to join Nandan Nilekani's Unique ID (Aadhar) project. However, after the move, he gained 20 kilograms in two years, due to the inability to exercise."To reverse that, I started tracking my own nutrition. But on websites developed overseas, we did not have Indian food available, so I felt this is something that should be built," says Vashisht. He teamed up with Sachin Shenoy in 2012 to develop further the idea and finally launched the website in 2013.The start-up, which started out as a website, has come a long way since then.

The company's unique selling proposition (USP) is its AI-based voice assistant, which acts as a health coach and helps users in their fitness journeys. Called Ria, the health assistant,

has the ability to decide the nutritional value of a food being just by pictures. Ria can answer fitness-related questions asked by the users and give suggestions about foods to eat, exercises etc. based on the past dataset fed by the user. She also does away with the hassle of feeding into the app, food items you are eating to keep track of your nutrition, as is the case with most fitness apps. Here, you can just click a picture of the food you are eating and Riya gives you the calorie count.

Business Today

News TECHNOLOGY News Now, an AI-based health assistant to help you stay fit.Now, an AI-based health assistant to help you stay fit.HealthifyMe's unique selling proposition is its AI-based voice assistant called Ria, which acts as a health coach and helps users in their fitness journeys.Voice assistants are the highlight of the season, and fitness, talk of the town. So, what if there is a voice assistant, who could help you stay fit? Keeping a track of your health could be pretty challenging and while there are smart watches around to help you track your sleep, exercise, pulse rate etc.

"The industry is just catching on. Health and fitness is becoming a very important part of everybody's lifestyle," he adds.The start-up is trying to tap on this trend not just in India but in other developing countries too. The app is already present in Malaysia, UAE and Singapore and is soon going live in Indonesia too. "Rio and emerging markets are the focus areas for us," informs Vashisht.

The company is now building Ria 3.0, which will have better capabilities and will be conversant in Hindi, Tamil, Arabic, and Malay, besides English.

Improve Physical Activity in Pregnant Women:

Physical activity during pregnancy is associated with several health benefits for the mother and child. However, very few women participate in regular physical activity during pregnancy. eHealth platforms (internet and mobile apps) have become an important information source for pregnant women. Although the use of pregnancy-related apps has significantly increased among pregnant women, very little is known about their theoretical underpinnings, including their utilization of behavior change techniques (BCTs). This is despite research suggesting that inclusion of BCTs in eHealth interventions are important for promoting healthy behaviors, including physical activity.

The aim of this study was to conduct a systematic search and content analysis of app quality, features, and the presence of BCTs in apps designed to promote physical activity among pregnant women.

A systematic search in the Australian App Store and Google Play store using search terms relating to exercise and pregnancy was performed. App quality and features were assessed using the 19-item Mobile App Rating Scale (MARS), and a taxonomy of BCTs was used to determine the presence of BCTs (26 items). BCTs previously demonstrating efficacy

in behavior changes during pregnancy were also identified from a literature review. Spearman correlations were used to investigate the relationships between app quality, app features, and number of BCTs identified.

Nineteen exercise apps were deemed eligible for this review and they were accessed via Google Play (n=13) or App Store (n=6). The MARS overall quality scores indicated moderate app quality (mean 3.5 [SD 0.52]). Functionality was the highest scoring MARS domain (mean 4.2 [SD 0.5]), followed by aesthetics (mean 3.7 [SD 0.6]) and information quality (mean 3.16 [SD 0.42]). Subjective app quality (mean 2.54 [SD 0.64]) and likelihood for behavioral impact (mean 2.5 [SD 0.6]) were the lowest scoring MARS domains. All 19 apps were found to incorporate at least two BCTs (mean 4.74, SD 2.51; range 2-10). However, only 11 apps included BCTs that previously demonstrated efficacy for behavior change during pregnancy, the most common being provide opportunities for social comparison (n=8) and prompt self-monitoring of behavior (n=7). There was a significant positive correlation between the number of BCTs with engagement and aesthetics scores, but the number of BCTs was not significantly correlated with functionality, information quality, total MARS quality, or subjective quality.

Our findings showed that apps designed to promote physical activity among pregnant women were functional and aesthetically pleasing, with overall moderate quality. However, the incorporation of BCTs was low, with limited prevalence of BCTs previously demonstrating efficacy in behavior change during pregnancy. Future app development should identify and adopt factors that enhance and encourage user engagement, including the use of BCTs, especially those that have demonstrated efficacy for promoting physical activity behavior change among pregnant women.

Improve diet, physical activity and sedentary behaviour in children and adolescents

The number of commercial apps to improve health behaviours in children is growing rapidly. While this provides opportunities for promoting health, the content and quality of apps targeting children and adolescents is largely unexplored. This review systematically evaluated the content and quality of apps to improve diet, physical activity and sedentary behaviour in children and adolescents, and examined relationships of app quality ratings with number of app features and behaviour change techniques (BCTs) used.

Systematic literature searches were conducted in iTunes and Google Play stores between May-November 2016. Apps were included if they targeted children or adolescents, focused on improving diet, physical activity and/or sedentary behaviour, had a user rating of at least 4+ based on at least 20 ratings, and were available in English. App inclusion, downloading and user-testing for quality assessment and content analysis were conducted independently by two reviewers. Spearman correlations were used to examine relationships between app quality, and number of technical app features and BCTs included.

Twenty-five apps were included targeting diet (n = 12), physical activity (n = 18) and sedentary behaviour (n = 7). On a 5-point Mobile App Rating Scale (MARS), overall app quality was moderate (total MARS score: 3.6). Functionality was the highest scoring domain (mean: 4.1, SD: 0.6), followed by aesthetics (mean: 3.8, SD: 0.8), and lower scoring for engagement (mean: 3.6, SD: 0.7) and information quality (mean: 2.8, SD: 0.8). On average, 6 BCTs were identified per app (range: 1-14); the most frequently used BCTs were providing 'instructions' (n = 19), 'general encouragement' (n = 18), 'contingent rewards' (n = 17), and 'feedback on performance' (n = 13). App quality ratings correlated positively with numbers of technical app features (rho = 0.42, $p < 0.05$) and BCTs included (rho = 0.54, $p < 0.01$).

Popular commercial apps to improve diet, physical activity and sedentary behaviour in children and adolescents had moderate quality overall, scored higher in terms of functionality. Most apps incorporated some BCTs and higher quality apps included more app features and BCTs. Future app development should identify factors that promote users' app engagement, be tailored to specific population groups, and be informed by health behaviour theories.

The use of web apps to improve nutrition outcomes:

We conducted a systematic review to determine if the use of nutrition apps resulted in improved outcomes, including knowledge and behavior, among healthy adults. Using app(s), cellular phone, iPads, mobile phone, mobile telephone, smart phone, mobile and mHealth as search terms with diet, food and nutrition as qualifiers we searched PubMed, CINAHL (January 2008-October 2013) and Web of Science (January 2008-January 2014). Inclusion criteria were peer-reviewed randomized controlled trials, non-controlled trials, and cohort studies published in English that used apps to increase nutrition knowledge or improve behavior related to nutrition. Studies that were descriptive, did not include apps, focused on app development, app satisfaction app feasibility, text messaging, or digital photography were excluded. We evaluated article quality using the Academy of Nutrition and Dietetics Evidence Analysis Manual. Data was extracted for knowledge, behavior and weight change. Our initial search identified 12,010 titles from PubMed, 260 from CINAHL and 4762 from Web of Science; of these, only four articles met all search criteria. Positive quality ratings were given to three articles; only one reported knowledge outcomes (non-significant). All four articles evaluated weight loss and suggested an advantage to using nutrition apps. Behavioral changes in reviewed studies included increased adherence to diet monitoring ($p < 0.001$) and decreased effort to continue diet without app ($p = 0.024$). Few studies, however, have explored the use of nutrition apps as supportive educational interventions. Most apps focus on weight loss with inconsistent outcomes. We conclude that using apps for education needs additional research which includes behavior theory within the app and improved study design.

Web Apps for Health Behavior Change: Protocol for a Systematic Review

The popularity and ubiquity of mobile apps have rapidly expanded in the past decade. With a growing focus on patient interaction with health management, mobile apps are increasingly used to monitor health and deliver behavioral interventions. The considerable variation in these mobile health apps, from their target patient group to their health behavior, and their behavioral change strategy, has resulted in a large but incohesive body of literature.

The purpose of this protocol is to provide an overview of the current landscape, theories behind, and effectiveness of mobile apps for health behavior change.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols will be used to structure this protocol. The focus of the systematic review is guided by a population, intervention, comparator, and outcome framework. A systematic search of Medline, EMBASE, CINAHL, and Web of Science will be conducted. Two authors will independently screen the titles and abstracts of identified references and select studies according to the eligibility criteria. Any discrepancies will then be discussed and resolved. One reviewer will extract data into a standardized form, which will be validated by a second reviewer. Risk of bias was assessed using the Cochrane Collaboration Risk of Bias tool, and a descriptive analysis will summarize the effectiveness of all the apps.

As of November 2019, the systematic review has been completed and is in peer review for publication.

This systematic review will summarize the current mobile app technologies and their effectiveness, usability, and coherence with behavior change theory. It will identify areas of improvement (where there is no evidence of efficacy) and help inform the development of more useful and engaging mobile health apps.

Smartphone Apps Increase Physical Activity : Meta-Analysis

Smartphone apps are a promising tool for delivering accessible and appealing physical activity interventions. Given the large growth of research in this field, there are now enough studies using the "gold standard" of experimental design-the randomized controlled trial design-and employing objective measurements of physical activity, to support a meta-analysis of these scientifically rigorous studies.

This systematic review and meta-analysis aimed to determine the effectiveness of smartphone apps for increasing objectively measured physical activity in adults.

A total of 7 electronic databases (EMBASE, EmCare, MEDLINE, Scopus, Sport Discus, The Cochrane Library, and Web of Science) were searched from 2007 to January 2018. Following the Population, Intervention, Comparator, Outcome and Study Design format, studies were eligible if they were randomized controlled trials involving adults, used a smartphone app as the primary or sole component of the physical activity intervention, used a

no- or minimal-intervention control condition, and measured objective physical activity either in the form of moderate-to-vigorous physical activity minutes or steps. Study quality was assessed using a 25-item tool based on the Consolidated Standards of Reporting Trials checklist. A meta-analysis of study effects was conducted using a random effects model approach. Sensitivity analyses were conducted to examine whether intervention effectiveness differed on the basis of intervention length, target behavior (physical activity alone vs physical activity in combination with other health behaviors), or target population (general adult population vs specific health populations).

Following removal of duplicates, a total of 6170 studies were identified from the original database searches. Of these, 9 studies, involving a total of 1740 participants, met eligibility criteria. Of these, 6 studies could be included in a meta-analysis of the effects of physical activity apps on steps per day. In comparison with the control conditions, smartphone apps produced a nonsignificant (P=.19) increase in participants' average steps per day, with a mean difference of 476.75 steps per day (95% CI -229.57 to 1183.07) between groups. Sensitivity analyses suggested that physical activity programs with a duration of less than 3 months were more effective than apps evaluated across more than 3 months (P=.01), and that physical activity apps that targeted physical activity in isolation were more effective than apps that targeted physical activity in combination with diet (P=.04). Physical activity app effectiveness did not appear to differ on the basis of target population.

This meta-analysis provides modest evidence supporting the effectiveness of smartphone apps to increase physical activity. To date, apps have been most effective in the short term (eg, up to 3 months). Future research is needed to understand the time course of intervention effects and to investigate strategies to sustain intervention effects over time.

Conclusion

Research on the various features regarding information computing in health care environments has been done.Cloud dynamically increases computation capacity whenthe loading is high and decreases it when the loading islow. Thus, this system is elastic enough to cover numerous requests from the Internet while providing high precision and a customised fitness diagnosis.These led to solve diet issues and physical activity guidliness for particular group of people like pregnant women, childerns and elders.