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Study of awareness of m-health applications among under-graduate medical students of Nootan medical college, Visnagar

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Abstract
Mobile health, a term used for the practice of medicine and public health supported by mobile devices. The m Health field has emerged as a sub-segment of E-health, the use of information and communication technology (ICT), such as computers, mobile phones, satellites, patient monitors, etc., for health services and information. M Health applications include the use of mobile devices in collecting community and clinical health data, delivery of healthcare information to practitioners, researchers and patients, real-time monitoring of patient vital signs, the direct provision of care via mobile telemedicine as well as training and collaboration of health workers.

Aim: To study the awareness of m-health among undergraduate students in a government medical college and to determine how many people would like to use m-health in their practice.

Methods: A cross-sectional study was conducted from November 2019 to December 2019 in first year medical students of Nootan Medical College. M-health survey questionnaires were designed and distributed among medical undergraduates, and their knowledge and attitudes toward m-health were assessed. Descriptive statistics on their knowledge, attitude and utilization patterns were calculated.

Results: About 136 respondents who had given verbal consent were included in the study. The response rate was 45%. Out of 136 students; 73 (53.67%) were males while 63 (46%) were females. The mean age of the participants was 21.5 ±2.5 years. Of this total, 57% had heard of e-health prior to the survey; 28% were of the opinion that healthcare professionals should hear about e-health in medical college; 50.5% believed that e-health services for developing countries were useful in general. According to 40.3%, more information on successful e- health projects would be necessary to introduce M-health services into medical practice. Self-education, and better diagnosis and treatments were the main motivational factors to use e-health. Of those surveyed, 67.2% had access to Internet but most of them had not used m-health apps more than once in half a year.

Conclusion: Students at our institute had a fair but not adequate understanding of benefits of m-health. Incorporating more information on digital health in undergraduate curriculum would enhance the quality of medical graduation and help to treat patients through e health resources like tele consultation and android applications. Review and references by media and respected medical experts was considered most important for downloading an e-health service. The present study demonstrates a lack of adequate knowledge about m-health among medical undergraduates. However, a majority believed that m-health has a very important role to play in present and future healthcare.

Keywords: ICT, Healthcare, Mobile health, Medical students

Introduction

Health needs and demands of individuals are constantly changing with time and trends of development and modernization, and it will be difficult for healthcare consumers to confront some of the prevailing health issues and problems without e-health technologies.

In recent years, the Global Observatory for e-health (GOe), an initiative by the World Health Organization (WHO), defined M-health as medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices [1].

The World Health Assembly in 2005 identified e-health as the way to achieve cost-effective and secure use of ICT for health and to reach communities with e-health services.

E-health is a means of ensuring that correct health information is provided in a timely and secure manner via electronic means for the purpose of improving the quality and efficiency of healthcare delivery and prevention of infections or diseases and disabilities.

Digital-health technology reduces waiting time; the medical and administrative costs on clients may be reduced by mHealth, thus promoting shared health management, assisting patients and communities to actively engage in their own care [2, 3]. These benefits can be achieved by having adequate knowledge of the mHealth components which will further enable the effective utilization of mHealth services in health-care delivery.

Electronic health (e health) introduces a range of services, which include

1. E-health records, which are used to ensure continuity of patient care across time;
2. Mobile health (m-health);

3. Telehealth services for remote patient monitoring;
4. E-health research

The National Health Policy 2017 (NHP 2017) envisages the goal of attainment of the highest level of health and well-being for ALL at ALL ages, recommends a paradigm shift from the existing silos systems to a holistic and comprehensive health eco-system, founded on the latest digital architectures and technologies [6].

Gujarat has been one of the frontline State in the implementation of e-governance policies & projects in India. The national health mission of Gujarat has implemented many e initiatives thus revolutionalizing health in Gujarat. Many e-Governance initiatives are launched to improve the Accountability, Transparency & Effectiveness in health administration [5].

Findings from this study will be useful in identifying gaps, providing data on preparedness for change from manual to digital technology for doctors and allied health experts, governments, and community members so as to adequately address society's unmet needs.

This study was planned to know the awareness about m-health among undergraduate medical students.

Aim

1. To study the awareness of m-health among undergraduate students in a government medical college.
2. To determine how many people would like to use m-health in their practice.

Methods

This medical school based cross-sectional, descriptive analytical survey was conducted in Nootan medical college, Visnagar over a 2 months period from November 2019 to December 2019 after taking permission from the Institutional Ethical Committee was a questionnaire-based study. The questionnaire was administered to the medical students. Convenient sampling was used to enroll students for this study. The inclusion criteria were that the student must be studying in MBBS, has voluntarily agreed to participate in this survey and completed the given questionnaire.

All present 136 students were informed about the study purpose and after verbal consent were enrolled in the study. The students were contacted during their regular classes and a 30 minutes session was planned of which 10 minutes were dedicated to inform the students about the purpose of the study and informed verbal consent was taken from those who chose to participate in this study. M-health survey questionnaires were distributed among medical undergraduates, and their knowledge and attitudes toward m-health were assessed. The questionnaire was administered in English which was the medium of instruction. The questionnaire was divided into three parts; part one contained demographic profiles, the second part contained open ended questions, third part contains personal inputs from the participants. The responses were analysed using Microsoft excel 2019 version. Descriptive statistics on their knowledge, attitude and utilization patterns were calculated.

Results

About 136 respondents who had given verbal consent were included in the study. The response rate was 45%. Out of 136 students; 73 (53.67%) were males while 63 (46%) were females. The mean age of the participants was 21.5 ±2.5 years. Primary source of information was multiple media outlets (37.2%) like internt, TV, radio. Even though the respondents had heard about m-health apps only 30 % of them had downloaded the m-health applications in their devices. Majority (60%) of them used the m-health apps belonging to private sector as they were easier and more entertaining. None of the respondents have paid user charges for the use of any app. Of this total, 57% had heard of e-health prior to the survey; 28% were of the opinion that healthcare professionals should hear about e-health in medical college; 50.5% believed that e-health services beneficial for patients.

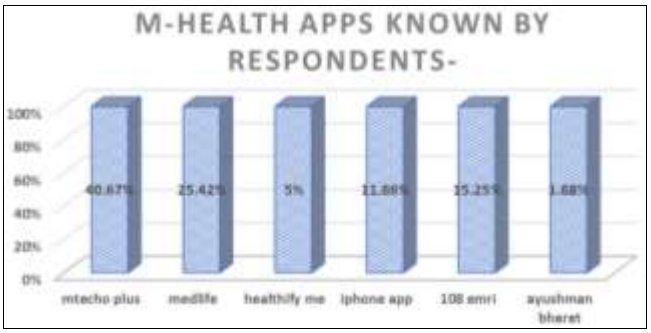

Fig 1: The m-health apps well known by medical undergraduates are described in above diagram.

According to 40.3%, more information on successful e-health initiatives would be necessary to introduce M-health services into medical practice. Of those surveyed, 67.2% had access to e health services.

Majority of the participants (41%) had average knowledge of m-health sevices while (23%) had good and (36%) poor knowledge of the same, respectively. This has been presented in Figure 2.

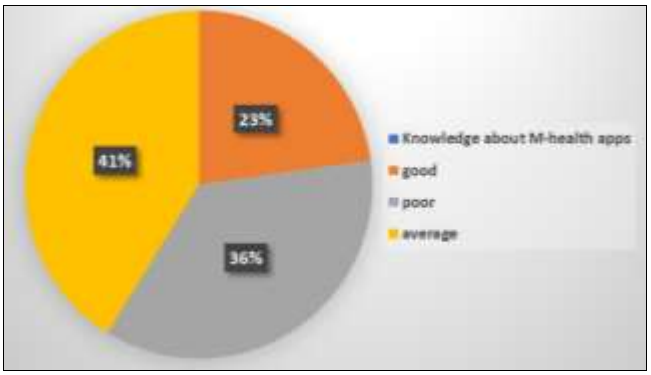

Fig 2: Knowledge of M-health apps among medical undergraduates.

The main resisitance to use of government m-health apps was due to application errors and registration issues. Also, lack of awareness about m-health apps were responsible for non-response among 50% of participants.

Discussion

The widespread benefits of utilizing technologies into the health-care service delivery model includes new tools for consumers to manage their day-to-personal health; better quality of care for a larger number of patients; more easily standardized care through centralization and information

technology developments; new opportunities for physicians to monitor and provide care to patients remotely; and greater collaboration to provide integrate. In previous studies, applications, such as internet, e-mail, word processor, PowerPoint, and computer received higher levels of use among health-care professional [11, 12]

Barriers to utilization of m-health

Review of Literature reveals inexhaustible benefits of e-health, including that e-health tools are embedded in a broad shift toward a digital culture, but healthcare sector has been slow or adamant to adapting to the fast-centric world of internet and adopting e-health in the healthcare services delivery system in developing countries

These barriers or challenges include both personal factors, such as educational status, technology-knowledge base and skills, gender, culture and orientation; and socio-environmental factors, such as health facilities and personnel, national health philosophy and policy, information and communication facilities, capacities and capability of network providers and the interconnectivity issue.

Behavioural barrier involves change management, especially with respect to resistance to change, power and politics around telehealth. Economical barrier includes reimburse healthcare workers for telehealth consultations, and open up of new patients enrollment. Organizational barrier involves integrating telehealth services into existing organizational structures and to provide institutional support to execute the services.

Some patients complain that ehealth tools such as laptops and other mobile devices depersonalize their encounter with the physicians (Rowe, 2018) [9] The deficiency in technological skills to use internet-based e-health tools, such as personal health records (PHRs) and disease management and behaviour change (DMBC) applications, the health sector thus lacks the capacity and ability to utilize the applications. Tanriverdi and Lacono (2009) [4] categorize barriers to the use of e-health systems into technical, behavioural, economical and organizational barriers.

In the coming years, mHealth will assist in revolutionizing the way healthcare is being delivered. From text message campaigns disseminating information on healthy lifestyles to the use of smartphones as medical devices capable of diagnostics and remote monitoring, mobile technology will permeate every aspect of global health systems.

Conclusion

There is a large body of evidence that suggest numerous benefits, effectiveness and utility of e-health systems. However, The knowledge, familiarity with the term "mHealth," and the use of mHealth was low among the medical undergraduates. Hence, there is need for more awareness and training on ways to use mHealth services to improve healthcare delivery, and also to include mhealth in the curriculum of medical students to expand the digital health consultations and data safely and easily available to patients and the communities.

Recommendations

To achieve public acceptance of the utilization of e-health applications by both health care professionals and beneficiaries to improve health of community, governments should come up with policies that will reorient the health sector, retrain the health personnels, and encourage digitalization of the sector through partnership with e-health developers and researchers, healthcare institutions, patients, policy makers and public health professionals. There should be ICT literacy programmes to enhance ICT skills of medical students to use these e-health devices ethically and development of user friendly M-health applications. More so, for the e-health applications to make maximum contributions to personal and public health management in a measurable way, community requirements should be at the center of the design and dissemination process. Instructional educational technology that teaches digital knowledge by health devices must be promoted in medical and allied health students.

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Declaration

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Conflict of Interest: Nil

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