E-game in Healthcare: As an E-intervention to Promote Public Health

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Dear Editor-in-Chief

Electronic Health (E-health) is referred to any communication technology, which could have impact on behavior change, physical activity, and dieting (1). One of the E-health tools is electronic intervention (E-intervention) that means treatment, prevention, management, and physical and mental health promotion with or without the support of human (2), which finally leads to promotion of healthy behaviors and reduction of health problems. The application of E-intervention in healthcare is divided into four areas (Fig. 1).
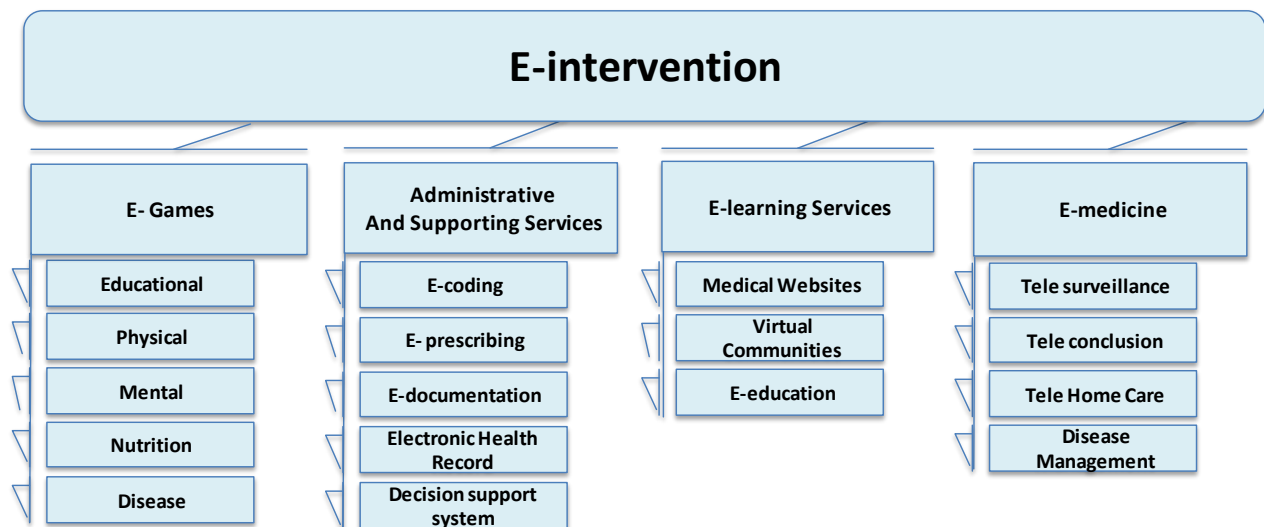

Fig.1: Application areas of E-intervention in healthcare

As shown in Table 1, these interventions have significant impact in reducing costs and medical errors, increasing efficiency of health services and quality of care, improving the registration, storage, and retrieval system, facilitating healthcare information sharing between the patient and the treatment team, and promoting knowledge through the accessibility of resources and useful information to optimize decision making (1, 3-8).

Table 1: The impacts of E-interventions based on reviewed studies

Application area	Studies reviewed	Study results
E-game	- Surgery, medicine and anatomy education -Simulation of treatment -Management of pandemic disease -Creating knowledge in the health of children -Changing in the behavior of children with ADHD -Creating behavioral changes in the balance of cerebral palsy -Intervention in mental diseases such as Alzheimer's -Use of games in self-management skills education -Use of Game in physical activity -Application of E-game in improving care plans and cost	-Increasing training and learning skills - Disease prevention - Changing children's behavior - Increasing mental health - Reducing amount of depression - Reducing signs and symptoms of mental disease -Impact on disease surveillance and notification -Increasing physical activity - Reducing health care costs
E-medicine	- Use of Telemedicine for the Diagnosis and Treatment	-Increasing access to health care and reducing costs in remote areas -Impact on reducing the cost and effectiveness of the services -Increasing patient satisfaction -Increasing quality of care
administrative and supporting services	-Notification in times of crisis	-Increasing awareness in times of crisis -Impact on the nursing standard documentation
E-learning services	-Web-based interventions in the treatment of disease (diabetes)	-Impact on treatment - Impact on the education of health professionals - Promotion of health education goals - Increasing speed of learning Choosing the time and place of learning by physician

The most effective interventions are E-games due to their attractiveness and entertainment for the users for improving knowledge and skills to solve the problems related to health care (2). This technology first created by Joyboard in 1982 has multiple applications in educational, physical, psychological, nutritional, and disease areas. Healthcare companies are also becoming active in the E-games market and offer a series of E-games for teaching children to eat healthier foods and increase physical activity. For example, cancer fighting games for teens worldwide has been demonstrated to empower teens in their battles with cancer and other games to help prevent obesity and manage childhood diabetes (9).

The benefits of E-games in healthcare are positive changes in healthy behaviors, disease prevention, diagnosis, treatment, promotion of awareness about risk factors, and Improvement in the quality of life (1). In fact, E-games by offering educational tips can be effective on promoting public health. Finally, there are three functional requirements for the implementation of E-game in healthcare that include development of an appropriate systems and tools, assessment of the interaction with users, and establishment of cognitive behavior indicators (10).

Acknowledgements

Reference

1. Catwell L, Sheikh A (2009). Evaluating eHealth Interventions: The Need for Continuous Systemic Evaluation. *PLoS Med*, 6(8):e1000126.
2. Graham ML, Uesugi KH, Niederdeppe J, Gay GK, Olson CM (2014). The Theory, Devel-

opment, and Implementation of an e-Intervention to Prevent Excessive Gestational Weight Gain: e-Moms Roc. *Telemed J E Health*, 20 (12):1135-42.

3. Graafland M, Ten Cate O, van Seventer JP, Schraagen JM, Schijven MP (2015). Mapping the Demand for Serious Games in Postgraduate Medical Education Using the Entrustable Professional Activities Framework. *Games Health J*, 4(5):381-6.

4. Koch C, Buice MA (2015). A Biological Imitation Game. *Cell*, 163(2):277-80.

5. Baranowski T, Blumberg F, Buday R, DeSmet A, Fiellin LE, Green CS, et al. (2015). Games for Health for Children-Current Status and Needed Research. *Games Health J*, 5(1):1-12.

6. Singh J, Badr MS, Diebert W, Epstein L, Hwang D, Karres V, et al(2015). American Academy of Sleep Medicine (AASM) Position Paper for the Use of Telemedicine for the Diagnosis

and Treatment of Sleep Disorders. *J Clin Sleep Med*, 11(10):1187-98.

7. Ajami S, Sarbaz M (2014). The necessity of the use of mobile and wireless communications systems in hospital disasters. *Health Information Management*, 11(6):665-6. In Persian.

8. Jahangiry L, Shojaeizadeh D, Abbasalizad-Farhangi M, Yaseri M, Mohammad K, Najafi M, et al. (2015). Interactive web-based lifestyle intervention and metabolic syndrome: findings from the Red Ruby (a randomized controlled trial). *Trials,* 16:418.

9. Donner A, Goldstein D, Loughran L (2008). Health e-Games Market Report: Status and Opportunities. San Francisco, CA: Physic Ventures

10. Aresti-Bartolome N, Garcia-Zapirain B (2015). Cognitive rehabilitation system for children with autism spectrum disorder using serious games: A pilot study. *Biomed Mater Eng*, 26 Suppl 1:S811-24.