

Paper Summary

In a utopian world prevalence of mobile devices would result in accessible and personalised high-quality health care for the entire population. However, that is not the case in real world today. mHealth is laced with open issues ranging from the effectiveness of such device interventions to the very design of an mHealth device. It is evident that mHealth as a concept lies at the intersection of technology and physiology, but the inconspicuous factors like legal regulations and user psychology also have a pivotal role in these products. This paper is a consolidation of the viewpoints from various perspectives (until 2014) by the authors. Table I summarises the key challenges studied in this paper.

Table 1 Summary of the challenges addressed in psychological, clinical, technical and regulatory perspective

Perspective	Questions/Challenges	Evaluations/Learning	
Psychological	To what extent are the mobile apps under-utilised?	<ul style="list-style-type: none">Majority of apps downloaded belong to only one kind of health care category – exercise and diet.Mostly passive in nature.Active apps have significant attrition when the initial excitement around novelty wears off.Overwhelming number of choices.Lack of trust - Private app certification organisations (like <i>Happtique</i>) have shown significant errors in their judgement.Large healthcare cost in chronic diseases but that market is untapped since the target population (aged greater than 65 years) are not savvy mobile device users	
	How can apps influence behaviour change?	More expensive apps are based on behaviour theory and are likely to be more effective in behaviour change.	
	Is access to self-treatment a good thing?	<ul style="list-style-type: none">Catering to a population with heterogeneous health intellect means very open interpretations of the diagnostic data. Can result in false sense of security.App development does not mean patient care is complete.	
Clinical	Is mHealth tech effective in patient care?	<p>Pros</p> <ul style="list-style-type: none">Improves accessibility.Removes structural barrier.Meets patient needs better . Eg. Lifestyle changes, drug adherence, vital signs monitoring etc. <p>Cons</p> <ul style="list-style-type: none">Insufficient evidence to actually assert the effectiveness of mHealth.Lack of systematic random studies hence, inconsistent results.	
Technological	Complex systems result in incompatible applications and lack of interoperability.	<p>Hardware challenges :</p> <ul style="list-style-type: none">Limited power supplyWifi/Bluetooth can interfere with hospitals medical devices. <p>Software(sw) challenges :</p> <ul style="list-style-type: none">Multiple mobile operating system, non-standardised drivers.Frequent sw updates require re-issue of certificates <p>Manufacturer can make their own OS agnostic own device.</p> <p>Cons : Costly approach, additional device for user</p>	
Regulatory	Can the apps be trusted?	<p>Regulated Apps (<i>FDA, MEDDEV</i>)</p> <ul style="list-style-type: none">Vague definition of “medical device”.Very time consuming process . Can be detrimental to innovation.	<p>Non-Regulated apps</p> <ul style="list-style-type: none">Faster certification.Unreliable as they can have ulterior interest and hence produce biased results
	How can users be provided sufficient info to know if they can trust an app while keeping the cost and effort low for distributors and developers?	<ul style="list-style-type: none">Standard Reporting : Device blueprint and transparent data handling detailsApp synopsis : peer review process <p>Cons : Low visibility for casual users</p>	

Things I liked about the paper

The strategy employed to identify the issues/challenges in each perspective and the attempt to find a systematic evidence, then draw the corresponding conclusion was a neat structure for this view point type of a paper. It is indeed a statistically sound paper.

I specifically liked the idea where they challenged the very effectiveness of mHealth in improving patient care while discussing the clinical perspective. Combining with other evidences, it makes the reader see the point that many of the “medical” devices can be just lifestyle accessories (exercise and diet related apps being most common) marketed and advertised for monetary benefit than real diagnostic value.

Areas that need improvement or clarification

There are some concepts being used without much introduction related to psychological factors for behavior change that are not very clear. The distinction between reinforcement and enabling is not obvious. Similarly, the arguments for paid apps being more trustworthy and in general better are not factually backed up.

In the suggestions for ameliorating some of the issues related to interventions from clinical perspectives, the analogy of ‘black box’ seems to be loosely defined. A well-defined analogy could drive home their point of view better.