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Smart devices and applications are an integral part of all aspects of everyday life, especially in the field of health, constituting the "eHealth movement". In Western countries, the growing prevalence of chronic diseases advocate for a more important place for eHealth alongside conventional preventive services. However, to date, few evaluations have been published. What is the real value of these devices as tools for prevention?

The use of smart devices and apps (SDApps) in prevention is based on two aims, self-quantification and socialization as a source of valorization.
The socio-technological quantified-self movement started ten years ago in the US. Its purpose is to provide an objective monitoring of health and health behaviors by quantifying health-related activities or constants. It promotes self-knowledge based on numbers provided by body sensors on scales, blood pressure monitors, pedometers or other devices that send information to a smartphone. The assumption is that collecting, measuring and comparing various biological, physical, behavioral and environmental parameters of lifestyle activities (e.g. sleeping, eating, exercise) or health variables improve well-being and can maintain or improve the subject's health. The underlying theory is that these data induce a perception of the body modelled in an essentially technical relationship determined by quantitative data. They make it possible to objectively visualize behaviors as part of a strategy of self-knowledge and self-construction, although these strategies are not always maintained in the long term (1,2).
The socialization effect of SDApps is based on the sharing of data collected by or on users. These users belong to internet-connected communities and share their data in order to be recognized for their efforts - such as smoking cessation, alcohol consumption reduction, sport performance - fostering mutual encouragement. It is a part of the social interaction economy that highlights that behavioral dynamics are linked to the dynamics of social relationships, depending on the influence from social groups.
Three uses of smart devices and apps could be determined. The first is surveillance by the measurement of a risk. The threshold plays a central role usually defined by external, often medical, norms such as BMI. It is not focused on action, only self-surveillance. Sharing on social networks is done to provide mutual assistance and support. The second use is routinization. The aim is to replace a bad habit with a more favorable health behavior. This use is focused on actions or changes and the central element is the regularity driven by motivation. Here, sharing is designed to provide encouragement. The third is linked to performance. In this case, the measurements become self-determined objectives, enhancing motivation to improve performance. Social networks enable the sharing of experiences as well as competition, and norms are derived or adjusted according to the challenge.

Could we now consider them as a new model of prevention? There are two contrasting hypotheses to defend the position of SDApps as a new means of prevention: they can transform the subject's relationship to her body and health through the adoption and subsequent normalization of behaviors (3) or contribute to a new representation of the body and health by promoting empowerment (4,5). However, can self-quantification and sharing of data actually achieve these changes and furthermore, can they facilitate behavior change as prevention is supposed to do?

Perhaps not. Firstly, as explained below, SDApps are essentially used to quantify activities and progress, project oneself towards a target, in order to enhance self-construction and self-control ….assuming, of course, that the Self can be defined by these variables and that knowledge shaping is sufficient to change behaviors! Does the fact that a tool allows me to

count my steps really make it an effective and reliable tool for prevention? Actually, we lack data to demonstrate their ability to truly support behavior change. There is a currently a blind spot in the literature on the mechanisms of efficacy and process evaluation of interventions with SDApps (MRC). A very limited literature explores the key functions (Hawe, 2009) of effectiveness of these devices. What little we know is on the form of application to be used longer and….the necessity of having a human presence to coach the user in their goals! We also know the most effective apps are those that allow users to find ways to change their behavior in their environment, by helping them identify the individual and environmental factors influencing their behaviors and to act on it, not those that only provide self-quantification and socialization. To succeed, they have to use other techniques of supporting change (6) such as self-identity constructing, schedule consequences anticipation, behavior regulation techniques, etc. Yet, in most effectiveness studies, behavior change theories are rarely used to support SDApp design and development. How could we claim to design effective SDApps for behavior change if we are unable to describe the mechanisms, the assumptions, the prevention models of change used?

Secondly, when it comes to practices around data-sharing, discussions between users are rare and it is not generally expected that they will align practices with each other. Moreover, sharing practices and measuring tend to decline with time (7). For example, one third of users stop using their device in less than 6 months, and 39% of commercial apps are used fewer than 10 times. These practices are therefore less a standardization of behavior than a sort of technological mediatisation and social mediation (1) enabling new forms of self-exposure or self-narration and an opportunity to communicate according to new codes (8).

Thirdly, the ability of SDApps to increase inequalities is an important issue. The digital divide may further accentuate the health divide between users with access to this technology and those without access (9,10). Three reasons are evocated by Eng (11): access to the technologies (11), the financial and technological limits of systems to provide technologies (territorial inequalities) (12) and the individual characteristics that influence access and use (culture, education, values, etc.) (13,14). Few efficacy studies explore these questions: What is the impact on social health inequalities? For which populations are they relevant, and who will be left by the side of the road? It is a key issue in prevention, whose main outcome is to allow everyone to be able to choose the most favorable behavior in one's context.

Lastly, some fundamental ethical questions remain unanswered: What is the ultimate goal of SDApps? Are the objectives to monitor, improve performance or accompany change? By developing empowerment or producing norms and conforming people to them? By stigmatizing or reassuring? It is not quite the same thing. If, as mentioned, the aim is to normalize behavior rather than to develop empowerment, we can't gloss over the ethical questions underlying any preventive approach using normativity. Moreover, of course, we cannot forget the essential question of how data is used in regards to individual freedoms. SDApps share data in an uncontrolled way, even if in the European Union, regulation on the protection of personal data would provide guidance. Finally, technology can be seen as a constraint, a discriminatory medium, a way to infringe upon privacy or use information for commercial profiling purposes.

To conclude, there are many questions behind the potential relevance of SDApps in prevention: the ultimate goal, mechanisms, consequences on different populations, the protection of individual freedoms. The question is not only "Are these objects relevant to prevention?" but also, "To what extent and in which conditions are they relevant?" It is only by answering these questions that we can determine if SDApps could be a part of an effective, reliable prevention model. To investigate these questions, we need to go beyond the tool, to see the use of SDApps as a complex intervention in and of themselves, or as a part of a holistic intervention with multiple interacting components.

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