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Paper id: 9

Title: New Trend of Medicalization and the Development of mHealth Technologies

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New trend of medicalization and the development of mHealth technologies

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Keywords: mHealth, medicalization, technomedicalization.

Abstract. Mobile health technologies play an increasingly important role in healthcare and self-care practices. They offer great opportunities for self-monitoring and self-control of health, and development of preventive life-style strategies. In many respects, they meet the new paradigm of "P4 Medicine" ("personalized", "predictive," "preventive" and "participatory" medicine) and are able to expand the autonomy of the patient. At the same time, mHealth technologies contribute to the processes of medicalization that are more accurately identified as technomedicalization. The study of the new trend of medicalization that is associated with the development of mHealth is an actual issue.

Medicalization and technomedicalization

The term "medicalization", as noted by P. Conrad, appeared in the late 1960s [1]. Despite the apparent interest in the concept of medicalization by philosophers, anthropologists, and culturologists, generally it is sociologists for whom medicalization has become a heuristic resource for consideration of medicine and society relations. In this context, of course, an important role was played by Illich "Medical Nemizida". He argued that the medical professional practice has become a major threat to health [2], but at the same time gave the power shift from the medical establishment to the highly specialized and technologically advanced medicine.

The second wave of interest in the medicalization can be regarded as a kind of reflection in new contexts of Illich ideas. Paper "Too much medicine?" was published in the Editorial column of BMJ and "The Lancet" drew attention to the new trends of medicalization in the 21st century. In the latter, the changing role of patients who "can now occupy active positions as advocates, consumers, or even agents of change" was noted [3]. The changing role of patients also anchors self-medicalization and self-medication concepts [4]. It is the use of medicines based on one's own decision. Self-medicalization became possible only as a result of increased patients' awareness about their health, greater access to health information, as well as information about the medicines, the possibilities of their use, interaction with other drugs and possible side effects. It is clear that the expansion of the information flow for patients is a result of a variety of information and communication technologies (ICT). These technologies have opened the possibility for the exchange of experiences and information among patients, online counseling experts, etc. Telehealth is one of the more recent applications of ICT in health care that promises economic benefits and benefits for users and their health. Certainly, ICT play an important, but certainly not the unique role in a multi-dimensional process of technomedicalization.

Another conceptual approach to enhancement of the technological capabilities of medicine is represented by Adele Clarke et. al [5] in three interrelated processes of technoscientization of medicine: computerization and data banking, molecularization and geneticization of biomedicine and drug design, and last, medical technology design, development and distribution.

We are talking about processes of technomedicalization, i.e. strengthening medicalization trends by improving the technological support of medical and social services. Technomedicalization allows to limit study of the medicalization processes to technological innovations. Smartphones, tablets, safety and control tools have become integral parts of our lives. IT-companies are constantly improving mobile devices, adjusting them to the interests of users, and interests of the healthcare field. The logic of capitalism becomes the logic of biocapitalism producing new means of self-care. According to P & S Market Research, the global mHealth market was valued at \$ 13,674.3 million in 2015, and it is expected to grow at a CAGR of 34.0% during 2016 – 2022 ".

Quantified Self Culture and mHealth technologies

In 2007, the editors of an American magazine "Wired" Gary Wolfe and Kevin Kelly drew attention to the fact that increasingly people track productivity, health, sports and other aspects of their lives with the accounting meticulousness: maintaining detailed records and then analyzing them and yielding most interesting results. Kelly and Wolfe identified the phenomenon by the term «Quantified Self». They associated the surge of interest in the study of information about themselves with the advent of smartphones, tablets, computers, other technologies, and credit cards. However, using the data they receive can give people new ways to deal with medical problems, help sleep patterns, and improve diet.

Quantified Self formed a new culture of "care of the self" (Foucault and other philosophers), in which self-control and self-optimization come to the forefront. Health sociologist D. Lupton talks about "self-tracking cultures", which "have emerged in the context of the current cultural moment of the belief that data are superior forms of knowledge, combined with the affordances of contemporary digital technologies that allow individuals to produce large masses of data about themselves. These discourses and practices intersect with others concerning individualization, reinvention, the neoliberalist privileging of self-responsibility and the importance of attaining knowledge about the self as part of working upon and improving the self" [6].

Lupton focuses on a large number of devices that are now available for an average user: programs, bracelets, a device for measuring glucose, etc. But in this context, it is important to distinguish between devices that are used by healthy people and devices that are generally used by people with medical problems. For instance, the measurement of glucose is very important for diabetics, and is unlikely to be used every day by a healthy person. Also it should be noted that the motivation of the QS-movement participants is poorly understood and researched.

Culture of "self-care" can be understood as driven by medicalization. In the context of this article the primary focus is self-tracking that involves of one's bodily parameters for healthy individuals. It is also interesting from the point of view of 'e-scaped medicine' that is increasingly moved to the realm of the Internet and challenges the authority of traditional medical experts.

New trend of medicalization and the development of self-tracking devices

Development of self-tracking devices generates a special lifestyle of self-care. For example, Chris Dancy, the most connected man in the world, uses about 700 sensors at any given time (<http://www.chrisdancy.com>). Of course, not all of them relate to health and body. However, for a healthy person constant monitoring can also mean over care, so a healthy person is concerned about his health just as much as a sick one. In this perspective, there may be a new position for a medical view - looking at health as a constant object for medical analysis. Traditionally the formed approach is that the closer medical opinion is needed in case of illness, to diagnose and cure patients.

However, mHealth technologies can transform a healthy person into a "permanent patient", who becomes greatly concerned with various aspects of health even if he/she does not feel ill. This changes the traditional concept of the body as a self-organizing system, being replaced by the new idea of the body as a subject of continuous monitoring. The degree of control may be increased with the development of new technologies. But what gives this control? There is a certain apprehension that the illusion of control can lead to a mis-assessment of controlled situation. This is problematic, as it is closely linked to the trends of self-diagnosis and self-medication, all the more intensified by quite

a lot of patients' forums on the Internet. In this context, health turns out to be primarily a problem of technology, and more precisely "domestic technology". But medicine is not only a *métier*, but it is an art, a clinical art, which takes into account the variety of health factors and patient characteristics.

MHealth technologies can make a significant contribution to the development of health saving behavior. This is one of the problems that various institutions of health care system are aiming to solve. But it is particularly important to have a subtle analysis and a clear understanding of what "good discipline" means for health. Devices for the quantification of sex, comparing sexual achievements (number of sexual partners, number and quality of intercourse) may not always be the health care measure and sometimes initiate questionable behavior, when young people share indices on social networks. As another example, devices for weight control can lead to excessive force, resulting in disease. Hyper control potentially carries the opposite effect and may be a factor in new medical problems. For example, a healthy woman with excess weight can become a patient with anorexia, constantly monitoring her data in a smartphone program. As a result, we can get a situation that is well characterized by M. Chrysanthou: "We are all at some time dwellers in the in between, taking our place alongside hypochondriacs, the worried well, the worried-and-maybe- not- well, and the not-worried-but-think- maybe -they-ought-to-be" [7].

Various mHealth devices draw particular interest for personalized medicine, many researchers pay attention to this aspect. Preventive and personalized medicine is a promising trend in healthcare development. M. Verweij examines medicalization in the context of preventive medicine in prism of two related processes. First, level of language and concepts: terms such as 'health', '(un) healthy', and 'illness' are used for 'new' areas: behavior, properties, events and problems which used to be part of normal life. Second, practical level 'medicalization' refers to the phenomenon that (healthy) persons tend to use medical information, advice and procedures for adjusting their life and lifestyle [8].

Personalized medicine, as known, is regarded as centered on a patient and on data. Melanie Swan emphasizes the shift of the patient role "from being a minimally informed advice recipient to an active participant, instigating collaborator, information sharer, peer leader and self-tracker engaged in participative medicine; a transition is underway from paternalistic health care to partnership models" [9]. Focus on a patient, his individual decisions and personal choices for health care is typical for mHealth. The latter, of course, will contribute to changing of patient and physician relationships, and moves in the mainstream of a personalized medicine in approving autonomy, activity and participation of the patient. However, the opportunity for participation must not become a duty.

This is not just a question of responsibility for health, but rather a question of employers' interest, who increasingly are becoming the new social actors in the process of medicalization. Employees get a lot of possibilities of control in productivity by means of self-tracking devices, as well as introduction of various "wellness programs", which in turn affect the cost of health insurance [10]. In addition, many insurance companies offer discounts for customers, who agree to use a health tracking system, firstly, because it may lead to a healthier lifestyle, secondly, because it may provide the insurers with means to model the risk and calculate premiums [11].

There are prevention programs, preventive genetic screening involving diagnostic procedures on the basis of preventive medicine. Diagnostic procedures are often regarded as one of the effects of medicalization, which is linked to over-diagnosis and over-treatment. Self-tracking may be considered as a factor of social request for genetic screening programs and various preventive diagnostic procedures as an extension of the new practices of self-care on the social scale. But the question is, who will pay for these programs and health services: the end consumer or public health system? Strengthening the role of medicine in such a context, it is possible to evaluate a trend of 'marketization' of health [12]. On the other hand, G.Contino believes that we can "imagine a scenario in which companies may be interested in providing 'free' health tracking services, in exchange for targeted communication and advertisement" [13].

It is important to note that the target group of mHealth technologies are people who have a free access to Internet, smartphones, and have the necessary skills. In some cases these devices can be more important for older people who typically do not have the appropriate skills. Bridging the "digital disengagement" for older adults suggests a number of actions: building needs, training and assisting in the development of new programs, increasing usability of these programs. This will enhance the positive effects of mHealth technologies on society as a whole [14].

Conclusion

The development of mHealth technologies have unconditional positive sides, however, it creates a new trend of medicalization, or rather technomedicalization of society. On one hand, patient's empowerment and autonomy expand, a patient receives a new means of self-care, but on the other hand, there are more risks of roping patients into medicine, and the issue of inequality of access between the young and older generations.

Acknowledgement

This research was financially supported by the Russian Scientific Foundation (Grant № 15-18-10013).

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