Digital Integrative Medicine – Just Knocking on Wood or a Bit More?

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Digital health according to the position paper of the Working Group “Digital Health” of the German Network for Healthcare Research (DNVF) summarizes “information and communication technologies in healthcare, including e-health, mobile health, telemedicine, big data, health apps and others” [1]. By using new approaches of data analysis in fields like deep learning, causal modeling, or data mining, digital health is considered as a complementary source for evidence-based medicine alongside the traditional clinical trial approach [2] and a promising area in the field of integrative medicine [3].

Although one would generally not expect the field of integrative medicine to be on the cutting edge of digitalization, a glance at the history of such applications reveals surprising facts about the interaction between integrative medicine and information technology: almost at the same time when Babbage’s Analytical Machine came out in the 1830s, Semen Korsakov, an official working at the Statistics Department of the Police Ministry who is known in homeopathy for his potentisation approach, constructed the so called “Homeoscope” [4]. Based on the method of information storage in punch cards, he was the first to apply a mechanic binary storage in patient care almost a century before the first punch card computers were used in algebraic problem solving and 130 years before Steinbuch invented his concept of the Learning Matrix [5]. Urged by the cholera epidemics in Russia to facilitate the search for information, he “stored” characteristic symptoms of a disease as a hole in the columns of a wooden plate. When a patient described his symptoms, pins were

placed in a wooden bar. When moving the bar over the plate it snaps if and only if all symptoms correspond to a certain disease. Unfortunately Korsakov’s innovation was ignored by the Academy of Sciences in St. Petersburg stating that “Mr. Korsakov wasted too much intelligence, in order to teach other people to live without intelligence” [6].

But also in the early application of information technology, integrative medicine found its place at the very cutting edge of research: in 1966, Pirtkien and Kenzelmann [7] described a computer program for homeopathic case taking using an IBM 1401 computer. Some 20 years later, Tani and Akahori [8] in 1985 implemented an advanced computer-based information retrieval in the field of traditional Chinese medicine based on 830 traditional remedies, while in music therapy Hasselbring and Duffus [9] described “Using Microcomputer Technology in Music Therapy for Analyzing Therapist and Client Behavior.”

Never heard of these applications before? Well, they never really made it into daily patient care. And this is a major obstacle for almost all digital innovations: there is “no consistent association” between the use of e-health systems and better quality in patient care if they are used isolated and are not integrated in routine daily care, as Romano and Stafford [10] found in their review on electronic health records and clinical decision support systems. Thus integrative medicine, if “integrative” also includes modern technologies, could be a blueprint for a patient centered environment for digital health applica-

tions and thus would attract scientists from fields like data analytics or health informatics for joint projects. As a desired side effect this would also underpin the underlying scientific attitude of integrative medical approaches.

For the patient, digital health at first sight might be associated with alienation from the physician. But in particular in the field of shared decision-making projects such as OpenNotes make medical records more accessible for the patient [11]. Thus patients' interest in reading the medical notes may increase and in the long run strengthen the therapeutic alliance of patient and physician.

Still not convinced? Well, let's have a look at the original German statement from the publication of Pirtkien and Kenzelmann [7] from 1966: "Die Rechenmaschine ersetzt nicht den Arzt! Er muss wie bisher die Anamnese erheben und seinen Befund festlegen. Für die Diagnose erhält er dann eine Gedächtnisstütze, Entscheidungen werden ihm aber nicht abgenommen! Die Technik verdummt den Arzt nicht, sondern vergrößert sein Wissen durch den Zwang, sich mit einer größeren Zahl von Möglichkeiten in der Diagnostik – auch in der der Arzneimitteln – auseinanderzusetzen." Isn't that really integrative? Perhaps more than a bit!

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