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of the Journal Scuola Democratica**

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VOLUME III

**Pandemic and Post-Pandemic
Space and Time**

ASSOCIAZIONE "PER SCUOLA DEMOCRATICA"

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Pandemic Space and Time**

ASSOCIAZIONE "PER SCUOLA DEMOCRATICA"
Via Francesco Satolli, 30 – 00165 - Rome, Italy

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A Competency Model for Obesity Prevention and Healthy Lifestyles Education through the Interdisciplinary and Sustainable Paradigm of Telemedicine

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ABSTRACT: Referring to health as 'complex problem' urging transdisciplinary research perspectives at present, hereby we present a research-based project addressing health literacy and obesity prevention through the interdisciplinary paradigm of telemedicine including medicine, education, biomedicine and computer science, with the aim to develop best practices and an educational competency model for obesity prevention and health promotion. Through an AI-based and patient-centered e-health framework, the project provides a holistic and sustainable approach to health literacy involving children and families in best practices on obesity and engaging in empowerment processes of psychosocial development, meant to support an independent and positive attitude through experiential learning within the salutogenic perspective. Objective is promotion of life-long capacities of informed decision and self-care in primary and secondary prevention settings, qualifying health education as active citizenship education meant to promote knowledge and participation of the person in the context according to a community-based approach with aim of well-being and quality of life. The present study constitutes a first working basis for experimenting telemedicine in healthcare and school settings. We present an exploratory research conducted with students of Educational Sciences and Psychology aimed at investigating preliminarily social impact of weight-bias and eating disorders and students' involvement in an educational competency models to promote healthy lifestyles and wellbeing. The first results highlighted strong connections between educational and clinical knowledge as urgent need to build more inclusive school and social systems and the emergence of new need of digital citizenship addressing the person's active participation in new digital health systems, made by health apps and medical devices, going from everyday wearables to telemedicine sensors.

KEYWORDS: Health education, Telemedicine, Digital health, Quality of Life

Introduction

The theme of health education is updated in the post-COVID society which, recognizing the role given to social and environmental factors in the transmission and impact of COVID-19, draws attention to the need for educational interventions to prevent and promote resilience at local communities level as lesson learnt from the pandemic (Lauriola *et al.*,

2021). While evidence increasingly attests a positive correlation between investment in education and healthcare, as well-designed and well-targeted 'non-economic benefit' investment in citizen's decision-making and information (EEE, 2021) at the forefront of the health policy agenda the search for community-based educational approaches to foster community-building emerges as a necessary element in the fight against global risks, resilience, participation and well-being in front of new health and environmental crises. Not only the citizen but also the patient, involved in secondary and tertiary prevention in a healthcare system characterized by a process of technological innovation aimed at achieving new ways of delivering services, treatments and solutions and to outline new partnerships to address health as a complex problem, is at the center of interventions that cannot overlook the principles of conscious and responsible participation, networking and long-term learning of lifestyles and improved behaviors of well-being and quality of life truly generative of health outcomes and a renewed citizenship. The new e-health system, focusing on the lower consumption of resources and the increase in efficiency (the so called value-based system) must be valuable for the patient and in this sense it generates resilience and involvement, consolidating patient-centered care (Tseng, Hicks, 2016).

In the post-COVID era therefore health, understood as defined in 1948 by the World Health Organization as a state of complete physical, mental and social well-being and conceived less and less in a dimension of individual responsibility, and more as a right-duty of the community, calls into question organic and coherent interventions aimed at promoting life and work situations and attention to contexts, starting from a paradigm shift achieved with the Ottawa Charter (WHO, 1986) where traditional approaches to health education focused on 'risks to personal health' were quickly overshadowed by focusing on more comprehensive environmental policies and interventions (Nutbeam, 2018). According to the Ottawa Charter, promoting health means:

- building a public health protection policy
- creating supportive environments
- strengthening community action
- developing personal skills.

Health and well-being, framed within the European Policy Framework and at the center of a global action with the First International Conference on Health Promotion (WHO, 2013) developer of a socioecological theory on health for a healthy development of the person in all conditions (work, leisure) and in the various stages of life, were then recognized as essential to achieving sustainable development with the Shanghai Declaration (WHO, 2017) that thirty years later repositioned them in the context of globalization and Agenda 2030. This declaration reaffirmed health as a universal right, an essential resource for daily life, a shared social objective and political priority for all countries, essential to meet today's interconnected challenges and to deliver on the promise of sustainable development (WHO, 2017), while the SDGS offer a unique opportunity to

address health and its many determinants in an integrated and transformative way.

Health today in the post-COVID era radicalizes strongly the openness to the pedagogical and educational gaze, so that it participates with its humanistic knowledge in policies that need to be increasingly integrated for an effective governance of the health system. Policies in which education is called to work on building integrated models to improve the well-being and quality of life of the citizen/patient, while the health professions gain from social sciences and pedagogical intervention perspectives of awareness and empowerment of the person at the heart of a systemic vision of health that recalls its active role in behaviours with repercussions on one's state of health.

In the context of primary, secondary and tertiary prevention, European educational research is called to promote the empowerment of the person through life-cycle approaches, as a capacity for participation and co-responsibility for the context, that is, processes of activation but also of knowledge and understanding aimed at building a personal knowledge, able to ensure healthier behavior, because it is based on scientific evidence. The reference is to the empowerment of the patient (Aujoulat *et al.*, 2007) in the wake of the model of Health Care Empowerment as substantial attention to the patient's ability to information, engagement, collaboration and resilience with educational objectives not specific to the disease, but which concern the strengthening or development of general psychosocial skills and the focus on experiential learning, a shift from historical modes of citizen participation (humanisation of care, perceived quality, service charter, informed consent) to wider and more complex control processes, critical awareness and participation, recognised as a useful tool for the provision of clinically and ethically effective and appropriate care while ensuring the highest possible level of equity in the use of resources. In the delineation of the new e-health system of digitization of health systems, with artificial intelligence tools increasingly able to operate precision and predictive medicine, the education of the patient is rooted in an idea of overcoming reductionism of the person identified in relation to the anatomo-functional dimensions only and disease as a process of pure diagnosis-cure-healing, for an understanding of the complexity of the disease that recognizes the right of the patient to be the protagonist of his health choices and takes into account the patient's experience.

1. From health literacy to digital health literacy through Telemedicine for obesity prevention

The dynamic relationships between education and health are expressed in the conceptual development and empirical evidence of health literacy, considered among the thematic 'pillars' of a holistic approach to health promotion including good governance, healthy cities and health literacy,

as interconnected challenges in a global approach to health (SHAFE, 2018). Within a triangulation citizens-environments-healthcare, citizens are at the center of processes of promoting health literacy, digital skills, commitment and democratic participation and equity of access. The World Health Organization refers to health literacy by talking about 'social and cognitive skills that determine the motivation and ability of individuals to gain access, understand and use information in order to promote and maintain a good state of health' and arguing that health literacy means improving people's access to health information and the ability to use it effectively, according to an extended definition that crosses the literacy boundary, to open up to the concept of empowerment (WHO, 1998).

Health literacy therefore becomes a tool for promoting health education which is not limited to the mere transmission of information but which aims at developing skills that allow or develop the ability to retrieve information, assess its reliability, to use them to exercise greater control over the determinants of one's health and to make informed, informed and optimal choices in this regard, starting from a traditional definition closely related to the basic concept of literacy, to extend the scope of empowerment and use it as a tool for the foundation of a modern citizenship (Kichbusch, Maag, 2007). The ability to understand health information is therefore closely linked to the ability to decide freely and consciously about it, in a connection of empowerment, health literacy and education towards the goal of overcoming psychological, cultural and social barriers that hinder access to health services and pathways.

As the core foundation of the school curriculum at the center of re-design processes to promote community and global well-being (OECD, 2019) health literacy promotes educational objectives in the classroom to enable children and adolescents to: accessing and navigating health information environments, understanding health messages, critical thinking and making informed health decisions, acquiring health knowledge and using it in new situations, communicate on health issues and concerns, use health information to promote one's own health, that of others and environmental health, develop healthy behaviour and attitudes, engage in healthy activities and avoid unnecessary health risks, become aware of one's own thinking and behaviour, identify and evaluate body signals, act ethically and socially responsible, develop a sense of citizenship and be able to pursue equity goals (Orkan *et al.*, 2020). The aim of this school is the recovering of its eminently educational vocation which should enable each student to develop responsibility and autonomy preparing to face the many uncertainties and difficulties of human destiny (Perla, 2020).

The new telemedicine applications in e-health aimed at promoting digitisation processes in healthcare, today supports digital health literacy as an extension of health literacy in the renewed digital context. New digital solutions, such as artificial intelligence and machine learning, virtual and augmented reality offer the opportunity for the person to

actively participate in their health promoting functional and critical skills in the post COVID digitalized context in which the model of citizen empowerment results in an investment in digital skills and data literacy, with a focus on promoting the ability to access and share data. The same Telemedicine Guidelines (Ministry of Health, 2014) indicate for patients the need for training, not limited to technological aspects, to intervene also on social and relationship aspects, on the change of medical relationship-patient, on the reassurance that, even at a distance, assistance and care is guaranteed to the patient and his pathology and education as well, especially in the management of chronic diseases. The overall strategy for the management of chronic diseases moves from a system that reacts to a sudden and unplanned event, towards a system that educates and empowers the patient to actively take care of his illness and treatment regime.

In this scenario within the Interdepartmental Research Center in Telemedicine CITELE at University of Bari we have hypothesized a multi/transdisciplinary study to understand the transition processes towards obesity and prevent obesity in primary, secondary and tertiary contexts. Obesity represents a disease in itself and a risk factor for major chronic diseases (heart disease, stroke, cancer, diabetes and chronic respiratory diseases). Excess weight is a highly significant predictor of the development of complications from COVID-19, including the need for hospitalization, intensive care and ventilation (WOF, 2021). Obesity represents an illness with psychological correlates (unsatisfactory body image, depressive and anxious symptoms, eating disorders, low self-esteem) and there also cases of prejudice and social and media stigmatization of people with obesity (bullying, weight bias, fat shaming)

Purpose of the study is:

- experimenting in a multi-specialist team with advanced AI-based applications of telemedicine clinical protocols for diagnosis, treatment and education of children with obesity or at risk of obesity
- identify an 'educational space' for the development of an empowerment-based educational model to empower people in managing health and achieve a quality of life balance

Objectives are:

- carry out a clinical trial of telemedicine for the diagnosis, treatment and educational therapy of children with overweight or obesity through a digital platform
- design gamified applications and educational tools within Learning Management Systems in the medical area for the treatment of children with obesity
- carry out data collection operations to define guidelines and best practices (e.g. diet, physical activity, etc.) to be integrated into a citizen's health education model and a therapeutic patient education model

- promote continuing education and training courses for patients and families in terms of assuming responsibility/autonomy in the context of treatment and healthy lifestyles.

Key challenges of the study is therefore promoting life-long learning for health and wellbeing. This means:

- working on the design of a new transdisciplinary paradigm, Virtual Patient Education, in the context of telemedicine applications to improve health outcomes and quality of life of the patients and families involved with outcomes as: clinical indicators, knowledge of the patient, quality of life, self-care and the ability to manage health care.
- developing a competency model for a healthy lifestyle through health literacy promotion in primary prevention contexts

2. An exploratory research: methodologies and results

In this context we conducted an exploratory research aimed to explore perceptions, experiences and beliefs of 357 students attending degree courses in Education and Training Sciences and Primary Education Sciences of the Italian University of Bari and of the Mediterranean University of Reggio Calabria on theme of obesity, eating disorders and educational strategies for related prevention and treatment (Massaro *et al.*, 2021)

The research questions were:

- What kind of representations do students have about obesity and eating disorders?
- On what dimensions is based their knowledge concerning nutrition and health?
- What are their perceptions regarding the design of an education for healthy lifestyles?
- What kind of involvement are they developing with the new digital health technologies? What knowledge derives it from? What is the impact of the new digital apps on their health practices?

The data were collected through the administration of a questionnaire consisting of 31 questions with both open and closed answers and the task of writing an episode evoked by the word 'obesity' experienced personally or indirectly.

The activities were preceded by viewing a short solicitation video and at the end a debriefing was started with questions having an explanatory, reflective and metacognitive function. 357 students (242 UNIBA; 115 from UNIRC) answered the questionnaire. The data were analyzed in aggregate form. The analysis was conducted by dividing the analysis of the 11 closed-ended items (using descriptive statistical techniques) and that of the 20 open-ended questions (by means of qualitative data analysis and content exploration criteria through computational analysis according to Queries functions).

There emerges almost total involvement of students in relation to the theme and the attribution of the phenomenon to causes of a psychological nature, indicating how the educational intervention opens in this direction to address the mental interiority of the person with obesity in a proactive and empowering direction of the personal identity, in connection with any clinical interventions.

99% of respondents state that they have heard of the problem of obesity or eating disorders and 98% consider obesity a relevant topic. With regard to the channels of access to information relating to the issue of obesity and eating disorders, the analysis shows the prevalence of informal channels compared to formal channels, as shown by the highest co-occurrences. Among the causes attributed to the condition of overweight or obesity in children, most (N = 203; 57%) consider psychological ones (insecurity, frailty) as priority, followed by sociocultural ones (family income, cultural background; N = 42; 12%).

It is interesting to note the representations on the impact of the variables 'age' and 'gender' on the problem of eating disorders: if there is agreement on considering the gender variable (male/female) to be of little relevance (78% replied negatively), as regards age, the population is divided, as 53% answered affirmatively and 47% negatively.

As results it emerged also:

- Accessibility to healthy food only for 42.6% of students
- Connection between intervention on obesity and environmental sustainability (84.4%)
- Important consequences of childhood obesity of discrimination and prejudice (weight bias at school and at work)
- Students' personal appropriation of nutritional education principles and healthy lifestyles, concerning which they propose immersive play and laboratory activities to be activated for children and families in school settings and on social networks
- Difficulties to activate training proposals for educators and teachers, for which courses, seminars, training, meetings with nutritionists, etc. are proposed by students

The last section of the questionnaire was built with questions aimed at grasping the involvement and impact of the new digital health applications on the lifestyles of the generation involved in the research, to detect their access and impact in terms of learning and practices about health:

- Do you use digital devices or apps to stimulate and/or monitor physical activity or food (e.g., wearable devices for controlling or stimulating physical activity or apps to guide food choices)? If so, which ones?
- Do you think that these digital technologies (e.g., smartwatches, pedometers, bracelets with sensors, etc.) can generate real forms of knowledge in those who use them about their physical condition?

- Do you think that obesity prevention interventions can be implemented through Telemedicine platforms?
- How do you think digital can currently contribute to supporting the issue of obesity prevention? (e.g., online counseling, devices such as pedometer or Applewatch, digital apps to guide food consumption, etc.

About half of the target of respondents (42%) uses digital devices or apps to stimulate and/or monitor physical or food activity, among which are mentioned in particular the Pedometer (N = 45), App to monitor physical activity (N = 17), the Smartwatch (N = 9) and a variety of applications to monitor calories, weight control, training.

As many as 71% believe that digital technologies can generate real forms of knowledge in those who use them about their physical condition: this data suggests the importance of digital technologies – also confirmed by the prevalence of media, social media and informal communication channels as ways of privileged access to information – in the prevention of eating disorders and in the promotion of healthy behaviors. In fact, students believe that digital can help support the issue of obesity prevention as digital devices and apps' can help regulate and monitor a certain lifestyle (only some fragments of the textual corpus are reported, postponing the detailed categorical analysis of the open answers in the extended descriptive contribution of the research).

Conclusion

The analysis of the data is currently under way. The goal is to obtain a database that can offer us useful interpretative support in the interdisciplinary work initiated within CITEL. The hope is also to demonstrate, in fields with strong bio- medical-informatics, connotation, the important role that knowledge and educational practices can play within a scenario that will revolutionize the approach of care and will increasingly promote the participation and self-regulation of patients

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