

# Unmet need, clear benefits, and policy progress: achieving the digital transformation of nutritional care in Europe

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**Abstract:** The obesity pandemic is ravaging Europe and the healthcare model in place is not fit for purpose to manage it: Around 350 million European adults are living with overweight or obesity. Treatment backlogs existed even before COVID-19, and are now exacerbated, with no clear route to resolution with the existing modes of care. The prevalence of nutrition-related diseases is set to rise even further, completely overwhelming the volume of nutritional care providers. These diseases severely disrupt patients' lives, burden health care systems, incur high costs, and testify to a need for a system transformation. Against this backdrop, digital nutritional care suggests itself as an effective, resourceful, easily deliverable, and scalable means to provide prevention and treatment to millions of Europeans in their daily lives. These clear benefits are increasingly prompting health care systems to embrace digital nutritional care. Collectively, the interplay of unmet need, clear benefits, and policy progress

create necessity, justification, and opportunity for a digital transformation of nutritional care. Achieving this transformation requires breaking down three barriers: the barrier of inaccurate terminology and evidence appraisal, the barrier of fear of adoption, and the regulatory and commissioning barrier. Concurrently, the new digital opportunity needs to be smartly utilised, using patient-centricity as a guiding principle for the continuous improvement of nutritional care services.

The obesity pandemic<sup>1</sup> is ravaging Europe and the healthcare model in place is not fit for purpose to manage it: Around 350 million European adults are living with overweight or obesity<sup>2</sup>. In its wake, other chronic conditions like Type 2 diabetes follow, with 9.5 million cases in Germany alone<sup>3</sup>. Treatment backlogs existed even before COVID-19, and are now exacerbated, with no clear route to resolution with the existing modes of care of episodic outpatient appointments. The prevalence of nutrition-related diseases is set to rise even further, completely overwhelming the volume of nutritional care providers. These diseases severely disrupt patients' lives, burden health care systems, incur high costs<sup>2</sup> and testify to an unmet need for additional nutritional care as well as demand for a system transformation. Against this backdrop, digital nutritional care suggests itself as an effective, resourceful, easily deliverable, and scalable means to provide prevention and treatment to millions of Europeans in their daily lives<sup>4</sup>. This mode of care empowers individuals to self-care through knowledge and support and provides the means for continuous monitoring and frequent touch-points; key factors in successful behaviour change<sup>5</sup>. These clear benefits are increasingly prompting health care systems to embrace digital nutritional care by offering regulatory access and reimbursement. Collectively, the interplay of unmet need, clear benefits, and policy progress

create necessity, justification, and opportunity for a digital transformation of nutritional care. Achieving this transformation requires breaking down three barriers: the barrier of inaccurate terminology and evidence appraisal, the barrier of fear of adoption, and the regulatory and commissioning barrier. In this paper, we analyse how these barriers can be removed and then scrutinise how the new digital opportunity needs to be smartly utilised, using patient centricity as a guiding principle for continuous improvement of nutritional care services.

First, overcoming the barrier of inaccurate terminology and evidence appraisal means clearing up a pervasive misunderstanding. Digital nutritional care actually comprises multifaceted modes of care, which can be mistakenly combined, raising general doubts about efficacy. To prevent derailing of the debate, accurate terminology needs to be applied. By and large, there are three modes of care: digitally-delivered, blended, and fully-digital. Digitally-delivered care is the provision of nutritional counselling with digital means, e.g. a video-consultation with a dietitian. Its efficacy is equal to on-site care<sup>6</sup> and telephone-delivered care<sup>7</sup>. Next, there is blended care, a hybrid of digital and expert care defined by a division of labour. An app enabling patients to photograph their food, accompanied by chat interactions with dietitians for diet adjustments is a case in point for this mode of care. A solid evidence base confirms

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**2** Erixon, F. Europe's Obesity Challenge. *Eur. Cent. Int. Polit. Econ. - Policy Brief* 2016, 1–13.

**3** International Diabetes Federation - Germany. Available online: <https://idf.org/our-network/regions-members/europe/members/136-germany.html> (accessed on 18.01.2022)

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that augmenting expert care with digital elements is effective<sup>4,8,9,10,11</sup>. In addition, qualitative research highlights that patients appreciate the easy integration of blended-care into their daily routines and the high levels of flexibility<sup>12</sup>. Lastly, fully-digital care is the autonomous provision of care by digital agents in the hands of patients. Only for this rapidly evolving mode of care, scientific evidence is rudimentary and inconclusive at this point<sup>13</sup>. A lack of comparability of the available fully-digital interventions complicates the evidence base further: Scientifically meaningful comparisons between autonomous smartphone apps, chat bots, and wearable interfaces are challenging. Adding to the complexity is the swift evolution of all facets of digital care, with new technology-infused care approaches superseding their predecessors at a rapid pace<sup>14</sup>. While admittedly more research is needed on all three modes of digital care, digitally-delivered care and blended-care already have strong evidence for their clinical effectiveness<sup>15</sup>. Against this backdrop of demonstrated clear benefits, future research needs to rigorously observe the distinctions between the three modes of digital care. This much needed precision is crucial for a focused and informed academic and political debate on the merit of digital nutritional care and, ultimately, to achieving the

digital transformation of nutritional care.

Second, the barrier of fear of adoption, again held in place by misunderstanding, is about the impact of digital care on people's roles or careers. Digital care is not destined to replace human care, but rather to augment and scale it to enable our volume of health professionals to meet the volume of demand in society. Digital care's ease of delivery and scalability will help to care for the 350 million overweight or obese Europeans - and thereby alleviate the scarcity of human care resources. In addition, empathetic relationships and rapport have been shown to be a key ingredient in successful digital care settings<sup>12,16</sup>. Most likely, human care will remain integral to digital care for the foreseeable future, with humans and technology supplementing each other. This relates to blended care in particular because of its proven efficacy and triage options. With data-based triage allowing human care providers to constantly assess patients' needs and devote their valuable time to the patients who need them the most, while delegating (parts of) the care for less complex cases to digital means. Accordingly, digital care in its current form is not a threat to dietitians' and doctors' livelihood, but a new tool they can use to benefit their patients - and for patients to more effectively self-manage.

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Acknowledging and popularising this insight removes the barrier of fear of adoption and, as a consequence, will transform care providers from sceptics to proponents – that is, competent users of their new digital care tools. Moreover, spreading this insight requires educational change to mirror technological change. The acceptance and endorsement of digital care by patients, care providers and payers is critical to its continued growth and success. Correspondingly, patients need to be informed, care providers trained, and payers' commissioning decisions altered, requiring a concerted effort of health care systems at large. In essence this effort needs to be focused on the education and upskilling of all parties: Healthcare stakeholders need accurate and comprehensive data points regarding digital nutritional care to enable informed and competent decision-making on all levels. As big technology companies are positioning themselves as large-scale digital care providers, leveraging their customers digitized health data as an asset<sup>17</sup>, the requisite transformation in traditional care models is becoming more urgent to enable comparative offerings.

Third, health care systems need to break regulatory and commissioning barriers to accommodate digital care. Germany is spearheading this regulatory revolution. The newly introduced DiGA (digital health applications) afford nationwide reimbursed digital care<sup>18</sup>, signifying unprecedented policy progress. Other countries are following suit, with France recently announcing that it seeks to emulate the DiGA policies<sup>19</sup>, and Belgium having already

installed an mHealth framework for nationwide quality control and reimbursement of digital care. The UK, Denmark, Sweden, Norway, and the Netherlands are all now preparing comparable regulations<sup>20</sup>. All over Europe, legislation is being redefined swiftly to embrace digital care. These new regulations also usher in epistemic changes: Real-world data studies are explicitly permissible to evaluate the efficacy of DiGA, allowing for large-scale evaluations with continuous data collection in the field<sup>21</sup>. This pivotal regulatory decision and the research resulting from it will advance digital health as a discipline. Accordingly, the ongoing policy innovations across Europe not only enable a productively regulated advancement of digital care, but also create an opportunity for further research.

To summarise, the removal of the barrier of inaccurate terminology and evidence appraisal, the barrier of fear of adoption, and the regulatory and commissioning barrier are major milestones to achieving the digital transformation of nutritional care in Europe. Simultaneously, digital care needs to be smartly utilised for maximal patients' benefits. Rigorous patient-centricity is key for identifying, testing, and harnessing the most effective elements of digital care through scientific scrutiny and real-world evaluation. For example, research demonstrates that certain behaviour change techniques, such as self-monitoring, can adequately be delegated to patients' smartphone<sup>5,22</sup>, relieving dietitians' and doctors' scarce resources. Accordingly, smart utilisation means listening: Patients will tell what

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works for them - when, where and how. In this context, future research needs to analyse which patients profit from digital nutritional care and which require traditional care. For example, some studies suggest that people with higher ages and low socioeconomic status might require the consideration of alternative approaches<sup>23,24</sup>. Ultimately, the upshot of this rigorous patient-centricity is personalised care, for which digital tools offer an unparalleled opportunity: tailoring<sup>25</sup>, personalised programmes<sup>26</sup>, and just-in-time adaptive interventions<sup>27</sup> to provide individualised care and usher in the end of one-size-fits-all stopgap solutions.

Thus, the digital transformation of nutritional care is well underway. Actions now can facilitate its adoption to enable more people living with chronic conditions to benefit earlier. So the question is not if, but how digital nutritional care will be implemented in European health care. Understanding and managing the ongoing paradigm shift through barrier removal, patient-centricity, and smart utilisation is a collaborative task, requiring a concerted effort from all stakeholders - for the best possible nutritional care.

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