

REVIEW

Towards evidence-informed integration of public health and primary health care: experiences from Crete

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ABSTRACT

"Integrated health care" is a concept that is frequently discussed and has received significant attention internationally. In particular, the integration of public health into primary health care has received much attention over the past two decades. However, despite this, integrated health care, encompassing public health, primary health care and evidence-based practice, largely remains a neglected area in many European settings. Many aspects pertaining to the operationalization and implementation of these concepts remain unresolved, particularly in settings where primary health care is under development or where reform is underway. The aim of this article is to share the experiences of the Clinic of Social and Family Medicine (CSFM) at the University of Crete School of Medicine in this area over the

past decade, in terms of insights gained through research, capacity-building efforts and practice focused on addressing major public-health issues in primary-care settings. We provide a brief overview of how data about health-care delivery, collected from capacity-building and research initiatives, can facilitate effective planning and implementation of the primary-care reform that is currently unfolding in Greece. We believe this information shows how to best design and rapidly test evidence-based approaches for the operationalization and implementation of integrated health care, approaches that can serve to address public-health priorities, improve the health and well-being of the population and support evidence-informed policy-making, in Greece and in settings similar to Greece.

Keywords: INTEGRATED HEALTH CARE, PRIMARY HEALTH CARE, RESEARCH, GREECE, ALMA-ATA, ASTANA, DECLARATION

INTRODUCTION

"Integrated health care" is a concept that is frequently discussed and has received the attention of many researchers and policy-makers internationally (1). The Framework on integrated people-centred health services, which was adopted with overwhelming support by the Member States at the sixty-ninth World Health Assembly, defined "integrated health services" as

health services that are managed and delivered so that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease-management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs throughout the life course (2).

Specifically, integrating public-health priorities into primary-care practice and research has received much attention over the past two decades, particularly when proactive models of practice are being discussed. Data suggest such integrated delivery systems can play an important role in improving the quality of care and health outcomes (3–6).

Fifteen years ago, upon establishing its strategic priorities in a landmark report on primary health care, WHO noted the importance of "community participation and intersectoral collaboration ... [as] many health issues ... cannot be effectively addressed by health systems working in isolation" (7). Given the need to improve surveillance and reinforce disease prevention to safeguard public health, this report emphasized the need for intersectoral collaboration, shared goal setting and priority alignment. The proposed model focused on the involvement

of intersectoral stakeholders and on building collaborative mechanisms across levels to ensure relevance of group interventions, while at the same time giving more prominence to public-health professionals in primary health care. Given the difficulties of addressing inequalities and meeting health goals even in developed nations, the model identified the importance of efforts to strengthen public health as a key component of primary health care when planning structural changes within health systems, with a vision of having public-health specialists working closely with primary-care teams and local communities to “complement the dominating clinical approach with population-based approaches” (7). The report also highlighted the importance of developing the public-health skills of primary-care professionals, with an emphasis on changing health-related behaviours and attitudes in the communities served by primary-care teams.

Despite the significant interest in and discussion of this topic, integrated health care, encompassing public health, primary health care and evidence-based practice, largely remains a neglected area in many European settings. This is particularly true in settings where primary health care is under development or where structural reform is being discussed or is currently unfolding, as is the case in Greece.

There has been a great deal of discussion and debate regarding attempts to reform primary health care in Greece over the past decade. In 2009 Lionis and colleagues reported on the importance of integrated health care as one of the core building blocks for primary health care in Greece, noting that primary health care in the country was in its infancy and highlighting that major structural changes within the current national health system, along with significant changes to the organizational culture, were key elements for moving towards integrated health care (8). This was followed in 2015 by an important report in which Tsiachristas and colleagues offered guidance on developing an evidence-informed action plan for implementing integrated health care in Greece, at a time when Greece undergoing severe austerity measures (9). Subsequently, primary-care legislation encompassing elements of integrated health care was enacted in Greece in 2017, with a strong focus on decentralization and the establishment of multidisciplinary teams that would be empowered at the community level through the introduction of a referral system with a common patient record, with the primary-care physician acting as the coordinator of care (10). The national primary-care reform action plan for Greece (11) also included efforts to implement team-based work in urban areas.

However, despite these recent attempts at reform, public health is still separate from primary health care in Greece, and the concept of integrated health care largely remains rhetoric. Of critical importance is the fact that there is no structural framework for collaboration between primary health care and public health on critical population-health issues, including major noncommunicable diseases, and minimal opportunities to implement population-based approaches. Nonetheless, there is some indication from system planners that consideration is now being given to how to better support the integration of public health into the primary-care reform plans currently unfolding in Greece.

As we celebrate the fortieth anniversary of the Alma-Ata Declaration (12) and with the key statements of the Astana Global Conference (13) highlighting the need to empower people and communities as owners of their health and ensure the provision of strong public health and primary health care, the core of integrated health care, throughout their lives, it seems timely to explore how integrated health care can be delivered in a country that is still struggling to develop a comprehensive and effective primary-care system.

The Clinic of Social and Family Medicine (CSFM) at the University of Crete School of Medicine has been a leader in both training and research to support quality improvement in primary health care in Europe, focusing on the integration of public-health priorities and interventions into primary health care while taking into consideration the need to rapidly develop skills in a cost-effective and context-relevant manner. The CSFM offers teaching and research opportunities to undergraduates and postgraduates, as well as continued professional training in areas of primary health care and public health, with extensive involvement in many large European research and capacity-building initiatives. In addition, by generating and evaluating educational and capacity-building tools, the CSFM provides data to inform planning for regional and local service delivery, as well as the national public-health agenda.

The aim of this article is to share experiences gained from research and capacity-building projects and programmes carried out by the CSFM over the past decade, translating this local experience into policy recommendations. Lessons learned include how to best design and test evidence-based approaches towards integrated health care. Each of the initiatives we will discuss has resulted in the development of tools for capacity-building and in data that can inform policy-makers about how to develop local, regional and, for targeted initiatives, national-level agendas. Our approach was informed by real-world data

on health needs, not just for Crete but also for other regions of Greece, through collaborative research projects. Thus, it is particularly relevant for informing effective planning and implementation of the unfolding primary-care reform in Greece, a country where public health and primary health care are currently not operationally integrated or even aligned in terms of effective agenda setting. In addition, it potentially can inform primary-care reform in other countries that are facing similar challenges.

METHODS

SETTING AND SITUATIONAL ANALYSIS

In Greece, there is a lack of data on primary health care; in addition, there are no national population-based registries and this impedes to a great extent the design and implementation of interventions suitable for addressing the health-care needs of the population. Nonetheless, data from Crete indicates that there has been a large increase in morbidity, mortality and risk factors for chronic disease in its historically healthy population (14, 15). Screening for early recognition of certain chronic illnesses, such as cardiovascular disease, cancer, mental disorders (16) and dementia (17), is not included as part of primary health care in Greece, while prevention and health promotion have not received the attention they warrant (18). Intimate partner violence, another social phenomenon with a public-health impact, has been increasingly acknowledged in recent years; however, screening and interventions for this issue are still infrequent in primary health care in Greece (19, 20).

INFRASTRUCTURE AND RESOURCES USED

The CSFM has attempted to build the necessary capacity to assess the health-care needs of the population of Crete (~623 000 people) and conduct a comprehensive analysis of primary-care services in urban and rural settings across the island. To achieve this rather ambitious goal, the CSFM worked on the development and establishment of a population-based cancer registry, and several projects have been implemented to document the burden of chronic illness and risk factors in Crete. In addition, a practice-based research network was developed to bring together university research activities and primary-care practices. The network supports collaboration between urban and rural primary-care practices, the CSFM and the hospital at the University of Crete, and aims to enhance the available research capacity and be used as a vehicle to conduct research and support the translation of the resulting knowledge into real-world primary-care settings. To this end, the network has played a key role in several

quality-improvement initiatives, including the development and integration of new IT tools to aid the uptake of evidence into practice, and played a key role in the Cretan Guidelines Review Group (see <https://www.cgrg.gr>) for the retrieval and appraisal of evidence and to promote a culture of evidence-based practice across the health-care settings it supports.

The CSFM has also participated in several European and international research and capacity-building consortia which brought together primary-care and public-health researchers and practitioners in national and multinational projects. In addition, substantial effort has been dedicated to the design and implementation of several research and innovative capacity-building projects primarily funded under programmes from the European Commission. This work has mainly focused on noncommunicable diseases, particularly cardiovascular diseases; cardiometabolic diseases, including obesity and diabetes mellitus; cancer; respiratory diseases; tobacco use and nicotine dependence; dementia and neurodegenerative diseases; and mental health and psychosocial issues. The CSFM has also worked extensively on developing programmes for rapid capacity-building to meet the needs of refugees and migrants (cross-cultural health), including needs pertaining to mental health, noncommunicable diseases and maternal outcomes. These chronic conditions and issues represent the major public-health threats to the Greek population, as identified in a recent WHO report (21) and in other reports published during the austerity period (22). In addition to characterizing the epidemiology of these diseases and conditions, the CSFM has studied their underlying health determinants, particularly smoking, alcohol consumption, obesity and other lifestyle issues, with a specific focus on supporting the integration of public-health interventions for these areas in primary health care.

PLANNING APPROACHES AND THEORETICAL FRAMEWORKS USED

The CSFM has previously reported on a 10-step approach to designing and conducting primary-care research in countries with restricted resources. In this approach, which was developed and applied in Crete (23), an initial assessment of the health needs of the population provides the cornerstone for planning and implementing context-relevant quality-improvement and research initiatives. On the basis of this information, research and capacity-building programmes can then be selected, designed and implemented to specifically address those needs.

Multiple theoretical frameworks and tools, including models, theories and approaches based on emerging evidence from

other settings, have been used to inform the CSFM's research into ensuring that population-level health interventions are relevant to the local context and to the community's needs and preferences. One model that was used was the chronic care model, which encompasses (a) facilitated community support, informal family support and self-management support to meet the needs of patients, (b) health-system improvements and delivery-system design to meet the needs of the health-care professionals and (c) enhanced professional case management and family support, together with decision support and robust clinical information systems (24). In addition, participatory and learning action (25, 26), normalization process theory (27), the health belief model (28) and the theory of planned behaviour (29) have all been used by the CSFM in various research and capacity-building projects, to guide both planning and the translation of data into action and to align European and national health priorities to the local needs of people living on Crete.

Using the data and experience gained from these research initiatives, the CSFM has created educational modules and tools to support the translation of knowledge to both individuals and communities and to enable links between public health and primary health care (8). In the context of this effort, multiple stakeholders, including the regional administrative and health-care authorities, were engaged in a systematic manner across the region, and a significant effort has been made to empower practitioners and researchers via training initiatives designed to equip them with new skills, including behaviour change techniques.

RESULTS: LESSONS LEARNED FROM THE CSFM'S INITIATIVES

The key findings from the CSFM's initiatives are summarized below. For detailed information about selected initiatives of the CSFM, including some of the assets that these initiatives have created, see Annex, which appears at the end of the article.

CARDIOVASCULAR AND CARDIOMETABOLIC DISEASES

A study¹ conducted in several primary-care practices in Crete and including 815 primary-care patients who were 40 years of

age or older showed that there was a high prevalence (73.6%) of metabolic syndrome (as defined by the NCEP-ATP III criteria) among the participants;² in addition, 13.4% of the participants were classified as being in the highest category for cardiovascular-disease risk (as determined by the European Society of Cardiology's cardiovascular-disease risk assessment system SCORE; SCORE $\geq 10\%$).³ Moreover, abdominal obesity was observed in over 60% of the patients, while 41% had diabetes. As part of this project, a comprehensive database was developed and populated with the cardiovascular profiles of all the primary-care patients in this study.⁴

In response to the high rates of cardiovascular risk and the risk factors identified in the study, the CSFM went on to participate in the SPIMEU project, a European project supported by the Consumers, Health, Agriculture and Food Executive Agency (CHAFEA) of the European Commission (see Annex) (30, 31). This capacity-building project sought to adapt and develop evidence-based primary-care tools to support the implementation of screening, education and intervention for the prevention and management of cardiometabolic diseases. The project showed that one of the biggest challenges for the implementation of an effective screening programme was the process of inviting individuals for risk assessment; in addition, it highlighted the importance of tailoring the implementation of selective cardiometabolic prevention in primary health care to the national context (32).

One of the key outcomes of the SPIMEU project was the creation of a screening toolkit developed on the basis of the knowledge and the experience acquired during the project. The toolkit is now ready to be implemented in public-health programmes, to assist in the early recognition of cardiovascular-disease risk and facilitate effective management of the disease (see Annex).

² According to the NCEP-ATP III criteria, developed in 2001 by the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, Adult Treatment Panel III (ATP III), metabolic syndrome is indicated when any three of the following five conditions are present: hyperglycaemia, central obesity, hypertriglyceridaemia, atherogenic dyslipidaemia (low levels of HDL cholesterol) and hypertension (for further information, see Third report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). NIH Publication 01-3670. Bethesda: National Institutes of Health; 2001).

³ SCORE (Systematic Coronary Risk Evaluation), developed in 2003, estimates the likelihood of fatal cardiovascular disease occurring in a ten-year period; it is based on gender, age, smoking, systolic blood pressure and total cholesterol (for further information, see Conroy RM, Pyörälä K, Fitzgerald AE, Sans S, Menotti A, De Backer G, et al. Estimation of ten-year risk of fatal cardiovascular disease in Europe: the SCORE project *Eur Heart J* 2003;24:987–1003).

⁴ See Footnote 1.

¹ Unpublished information from Anastasaki M, Papadakis S, Linardakis M, Anyfantakis D, Symvoulakis EK, Lionis C. Prevalence of metabolic syndrome and cardiovascular risk in primary care patients in Greece: a red flag for screening, prevention and treatment. *BMC Fam Pract* (manuscript currently under review).

OBESITY, PHYSICAL INACTIVITY AND DIABETES

The CSFM had a strong involvement in the MEDIS (MEDiterranean Islands Study) study, a longitudinal study of the health and nutrition of people aged 65 and over in the Mediterranean islands. This study provided thorough insights and novel data regarding the prevalence of obesity, physical activity and diabetes in the elderly population in Crete and other islands and has documented the relationships of these with sociodemographic, clinical and lifestyle characteristics (33–36). The numerous health benefits of adherence to the Mediterranean diet have been also reported by the MEDIS study (37).

CANCER

In Crete, cancer incidence and mortality statistics are systematically collected by the population-based Cancer Registry of Crete (CRC; <https://www.crc.uoc.gr>), which is coordinated by the CSFM (see Annex). The data indicate that there has been a significant increase in the number of all cancers in Crete over the last two decades (38–42). Notably, malignant neoplasms of the lung and bronchi are the most common invasive cancers for both women and men in Crete, with new lung cancer cases accounting for 9% of all cancers; the age-standardized incidence rate for lung cancer in Crete is 40.2/100 000/year, with the rate for men being 73.1/100 000/year, and that for women being 11.8/100 000/year. The steady rise in the lung cancer rate during the last two decades, particularly in women, outlines the need for targeted, geographically oriented, lifestyle preventive measures for lung cancer in Crete (41). Additionally, lung cancer mortality has been found to be strongly correlated to multiple morbidity, family cancer history and exposure to outdoor air pollution, and several hot spots of high incidence within the island have been identified (38).

RESPIRATORY DISEASES

A range of studies has been implemented in Crete within the framework of the FRESH AIR programme, which is funded by the European Union (EU) research and innovation programme, Horizon 2020 (43) and which aims to document challenges associated with the provision of respiratory care by primary-care services in Crete, with these challenges serving as potential targets for quality improvement (see Annex). This project was implemented under the auspice of the International Primary Care Respiratory Group, which has for a long time supported the integration of public health into primary health care in Europe. It is expected that the results of this project will be published next year. However, preliminary data indicates that educational interventions targeting primary-care providers

and the public may have substantial impact for patient/community mobilization and the promotion of behavioural changes, and that multidisciplinary collaborations involving the active participation of patients, such as pulmonary rehabilitation programmes, may be feasible, acceptable and economical for local health-care systems.

TOBACCO USE AND NICOTINE DEPENDENCE

Tobacco use is among the leading causes of preventable death, disability and health-care spending in Greece and is a leading cause of the major chronic diseases affecting the population. The TiTAN-Crete (Tobacco treatment TrAining Network in Crete) project, a knowledge-translation initiative led by the CSFM in partnership with the University of Ottawa Heart Institute, documented very high rates of tobacco use, daily cigarette consumption and nicotine addiction among primary-care patients in Crete, as well as showing a relationship between tobacco use and mental health (44). The initial pilot study, which focused on general practitioners (GPs) in Crete, documented significant increases (25–48%) in rates of evidence-based treatment following exposure of the GPs to the TiTAN-Crete training programme (see Annex) (45). Based on this positive experience, the TITAN Greece & Cyprus project was launched in 2017 to support a national scale-up of the tobacco treatment training programme and disseminate a toolkit of resources for supporting the integration of evidence-based tobacco treatment into busy primary-care practices, in collaboration with six medical schools from across Greece and Cyprus and with funding support from Global Bridges⁵ (see Annex) (46). Consequently, the TiTAN-Crete project is an excellent example of how the CSFM can work in partnership with international experts to adapt and successfully implement an existing best-practice model (in this case, the Ottawa Model for Smoking Cessation) that can now serve as a national best practice in primary health care (47).

DEMENTIA AND OTHER AGE-RELATED NEURODEGENERATIVE DISEASES

The CSFM's THALIS project has contributed to the development and implementation of several tools that can be used in primary-care settings for the assessment of cognitive status, while at the same time providing evidence that

⁵ Global Bridges is "a science-based initiative ... connecting and mobilizing health care professionals and organizations dedicated to advancing effective tobacco dependence treatment and advocating for proven tobacco control policies" (from Global Bridges. About us. In: Global Bridges [website]. Rochester, MN: Mayo Clinic; 2018 (<https://www.globalbridges.org/about-us/#.XAvxHjGYTIU>, accessed 7 December 2018)).

dementia and other age-related neurodegenerative diseases such as Alzheimer's disease continue to be neglected areas in primary health care and pose significant threats to public health. For example, data from the THALIS project found that one out of five primary-care visitors aged 60 and over had low scores for the Mini Mental State Examination (MMSE). In addition, twice as many women as men had low MMSE scores, indicating that women were more vulnerable to age-related cognitive impairment, which was associated with a variety of risk factors, including lifestyle factors as well as certain comorbidities (48). In addition to the MMSE, other diagnostic tools for the assessment of cognitive status have been identified by the THALIS project as being suitable for use in clinical practice routines in primary-care settings (49, 50).

MENTAL HEALTH AND PSYCHOSOCIAL PROBLEMS IN PRIMARY HEALTH CARE

Mental-health problems are extremely prevalent worldwide and are responsible for immense suffering, poor quality of life, increased mortality and staggering economic and social costs. To address the issue of mental health and psychosocial problems in Crete, the CSFM has developed DEPREXIS, an electronic platform that will assist GPs and primary-care nurses in identifying common mental-health disorders so that suitable psychological support can be provided. DEPREXIS electronic platform is now ready and will be implemented in 10 primary-care practices in Crete. In anticipation of this, the CSFM has also prepared a training course for users of the platform.

Migrants' mental health has been another topic that received great attention in research and intervention projects carried out by the CSFM. Within the framework of a CHAFEA project entitled the EUR-HUMAN (EUropean Refugees-HUman Movement and Advisory Network; see "Primary care for refugees and migrants" for more details), an educational module was developed for use by primary-care practitioners, including a set of tools for rapid assessment of the mental health and psychosocial needs of refugees and (<http://eur-human.uoc.gr>) (51). Key mental-health problems identified among refugees and migrants included depression, insomnia and anxiety (52). In addition, the project contributed significantly to the development and enhancement of capacity-building for staff in community-oriented primary-care centres and other primary-care settings for the care of refugees and migrants in EU countries. Qualitative research carried out as part of another EU collaborative project,

the RESTORE project (see Annex),⁶ also identified the significance of mental-health illness in primary health care among undocumented migrants in Greece. The mental-health problems most frequently encountered among migrant users in Greek primary health care were depression and anxiety disorders, acute stress reactions, post-traumatic stress disorders, chronic alcohol and other substance abuse, and domestic violence (53). A number of health-policy gaps and shortcomings in health-care provision were also identified, such as a lack of practice guidelines and protocols, leading to role ambiguity among health-care professionals (53).

CSFM has also led the effort to translate the PREMIS (Physician Readiness to Manage Intimate Partner Violence) survey into Greek and tested the survey's validity and reliability among a sample of primary-care physicians. One important result of this work was the identification of factors underlying why GPs have difficulties in effectively addressing domestic violence among their patients; these factors include role ambiguity in the management of the victimized patients, a lack of confidence in diagnosing the problem, discomfort in discussing intimate partner violence with patients, mistrust in the referral services, and confidentiality issues affecting recording practices (54). Upon recognition of the training needs of GPs, the CSFM designed an evidence-based educational intervention to increase the knowledge of GPs in domestic violence issues and improve their skills in effectively responding in this area (55, 56).

As psychosocial problems are associated with a high mental-health burden and a high demand for medical care in primary-care practices, the CSFM has also attempted to identify factors that are protective against psychosocial and mental-health problems. In the Spili III project, the Beck Depression Inventory Scale, the Royal Free Interview for Spiritual and Religious Beliefs scale and the Sense of Coherence scale were used to explore the psychosocial dimensions of life with depression. The results revealed that psychosocial determinants may play an important role in the course of disease progression for several diseases, including cardiovascular disease (57).

PRIMARY CARE FOR REFUGEES AND MIGRANTS

The EUR-HUMAN project, mentioned above, was an EU capacity-building project led by the CSFM for the provision of

⁶ The RESTORE project "focuses on optimising medical and psychosocial primary care for migrants in Europe with a particular focus on communication in cross-cultural consultations" (from RESTORE. Mission statement. In: RESTORE [website]. Galway: National University of Ireland Galway; 2018 (<http://fp7restore.eu/index.php/en/about-restore/mission-statement>, accessed 8 December 2018)).

effective, integrated and compassionate health-care delivery for refugees and migrants (52, 58). This project was informed by an initial qualitative study which offered important insights regarding the health needs, preferences and wishes of refugees and newly arrived migrants and taking into consideration the barriers they encountered to accessing health care. The impact of the EUR-HUMAN project extended well beyond the short duration (one year) of this capacity-building project with (a) the development of competencies of primary-care professionals, (b) the systematic empowerment of primary-care professionals by giving them the means and tools to care for refugees and newly arrived migrants, thus quickly and efficiently increasing capacity in terms of expertise and resources, (c) the provision of evidence to inform the relevant health-care policy-makers and (d) the development of tools for brokering dialogue with stakeholder groups (51). The project involved several EU countries and resulted in the development of a toolkit and online resources for primary-care professionals (see Annex) (51, 52).

The EUR-HUMAN project highlighted many systemic shortcomings in primary health care pertaining to migrant health care in Greece, for example, the absence of clear policies on entitlement to care and legal restrictions on health-care access for marginalized migrants, particularly undocumented migrants and refused asylum seekers, and the structural barriers to health-care access for these groups (these barriers were also identified as part of the key findings of the RESTORE project; see Annex) (53, 59–61). The data indicate that, to address these shortcomings, developing the skills of primary-care professionals in the two critical areas of mental health and maternal and child care should be prioritized; in addition, cultural and linguistic competence is needed in order to establish the necessary communication channels and develop relationships and/or good rapport with the affected groups.

DISCUSSION

In this article, we shared experiences gained from research projects carried out by the CSFM in Crete. We have attempted to demonstrate the need for integrated health care with a focus on public-health priorities and interventions with the ultimate goal of providing output for evidence-informed policy-making. Through our description of numerous research initiatives carried out by the CSFM, we aimed to demonstrate how integrated health care could substantially contribute to recognition of the burden generated by the major chronic diseases, and the problems encountered in primary-care delivery. The models we used in Crete have facilitated the translation of evidence into practice, and we hope that the

data generated will contribute to the current discussion on the integration of public health into primary health care in Greece.

Towards this end, one important task for the CSFM was building capacities and relevant infrastructure to facilitate both research and clinical work in primary health care. One of these actions was the establishment of the CRC. It succeeded in delivering, to both stakeholders (local governments, health planners, specialists, researchers, the general public) and primary-care providers, tools to facilitate effective implementation of integrated health care. The CRC offers a digital monitoring system to identify high-risk populations and communities, examine hypotheses regarding causation and inform proposals for targeting public-health measures to address cancer risk and incidence, and is of equal value to primary-care practitioners and practitioners at other levels of care, as well as other stakeholders. Understanding local trends and patterns in order to assist primary-care practitioners in making early diagnoses based on probabilistic medicine and optimize family support and advice by taking into consideration people's needs and preferences (including the stigma associated with cancer, as this still exists in many settings), ethnicity and age, as well as other demographic characteristics is of critical importance in health-care delivery. In addition, by correlating data from smaller communities and identifying clusters, the CRC can help identify high-risk populations, particularly in remote or rural areas where early detection may prove particularly challenging. It can also better support resource allocation and inform national policy and acute-care planning.

Another important outcome emerging from the CSFM's work has been the development of evidence-based educational tools and training models that align with local population-health needs and address current challenges by empowering practitioners to screen for, identify and manage noncommunicable diseases and risk factors in the context of daily primary-care practice, especially in vulnerable and high-risk populations. In particular, the toolkit developed by the SPIMEU project will assist primary-care practitioners in implementing effective screening programmes for cardiovascular disease. Preliminary data from the FRESH AIR project indicates that multidisciplinary collaborations involving the active participation of patients, and educational interventions targeting both primary-care providers and the public, may promote behaviour change both among patients and in the community and can be easily adopted by local health-care systems. The THALIS project showed that early recognition of cognitive impairment could be facilitated through the use of evidence-based and validated steering tools in the primary-care setting. With the roll-out of DEPREXIS, it is anticipated that early recognition of common mental

disorders by primary-care providers can be achieved, resulting in the effective implementation of psychological interventions. Finally, the two projects targeting migrants and refugees indicate that it may be possible to address the current inequities in primary health care among these groups by giving primary-care providers an expanded role as a “gate opener” rather than “gatekeeper” and coordinator of care to the wider health-care system (62), providing the compassionate approach needed for caring for all of the people in the community a primary-care team serves. These projects also revealed to a large extent the need for a link between public health and primary health care and can guide policy-makers in the next attempts at achieving integrated health care.

This article does not claim to present a new research-based model; rather, it shares experiences gained during an attempt to address the need in Crete for integrated health care with a focus on public health. We suggest that these experiences, which were acquired from the CSFM’s research activities, can inform future training, policy and practice, both in Greece and in countries in similar situations. Certainly, in implementing any change in a country’s primary-care system, gradual implementation is needed, always with a focus on transparent governance and existing resources and mechanisms that can be used. A monitoring framework for any such action would enable the fine-tuning of tools and intervention models to provide the adaptation needed to align with the political and economic conditions of the country in question.

We hope that the approach and lessons summarized in this article will contribute to the current discussion on primary-care reform in Greece, with an emphasis on the major public-health problems affecting the Greek population, and provide a clear focus and orientation for the design of systems to deliver integrated health care in Greece. The data obtained during the initiatives described in this article show that focusing on the rapid reduction of the burden of major chronic conditions in the Greek population should be a high priority, so this article may be viewed as a call to action for integrating public health into primary health care in Greece. Specifically, we hope that the information in this report will be used to

(a) assist with making more visible the link between public health and primary health care in Greece, where currently the two domains operate as separate entities, and help make more explicit the person-centred approaches needed at the practice and services level;

- (b) offer tools and training material for the re-training of primary-care physicians and practitioners, with a focus on health behaviour change and organizational change;
- (c) contribute to the design and implementation of population-based health promotion and disease prevention programmes; and
- (d) incorporate lessons learned into training programmes for undergraduates, medical residents and continuing medical education.

We hope that the lessons learned from the initiatives described in this article will contribute to the current dialogue about the new educational curricula for undergraduate medical training and vocational training for the specialty of general practice in Greece. We also hope that this article offers not only ideas but also a concrete outline of the content, methods and tools that could be used for the successful integration of public health into primary health care.

The CSFM is currently discussing the important issue of how to ensure financial and programmatic sustainability for the efforts that have been undertaken, and is working on translating the lessons learned and tools that have been developed into concrete actions to promote the integration of public health into an effective system of integrated health care. To this end, the CSFM, in a strategic partnership that includes the Region of Crete as well as the regional health authorities, has teamed up with representatives from patients, the wider community, and key stakeholder groups, including medical students and researchers at the University of Crete, as well as primary-care practitioners, to initiate the dialogue needed to prepare a strategic plan for systemic changes in the primary-care system in Crete, with collaborative actions having already been agreed upon. For example, educational modules are being prepared for the undergraduate medical curriculum, GP residency vocational training and continuous professional development, and ways of systematically engaging both policy-makers and the wider community, including people with potentially limited or impeded access, are being explored.

CONCLUSIONS

At a time when Greece faces the challenges of austerity and health-system reform, it is particularly important to examine local as well as international best practices and experiences. In this article, for the first time, the experiences gained from several European research projects have been summarized,

in order to support evidence-informed policy-making in a setting in which primary health care is still attempting to find its own way. It is anticipated the experiences and lessons learned in Crete will be used to inform practice and support the development of a progressive primary-care system in Greece, one with a strong orientation towards public health and a focus on the major public-health threats and problems, to monitor, evaluate and promote integrated health care in a country which only recently has started to incorporate this key concept in its health-policy agenda.

Beyond Greece, looking at changes worldwide since the Declaration of Alma-Ata 40 years ago (12) and in the light of the Declaration of Astana (13) and the 2018 WHO/UNICEF report A vision for primary health care in the twenty-first century (63), we believe that we now have the opportunity to learn from the errors of the past and to build capacity and invest in people-centred actions for the delivery of effective health care. As stated in the WHO/UNICEF report, in order to achieve the ambitious vision set forward for primary health care in the twenty-first century, transformational action is required; specifically, the report identifies thirteen “levers” deemed necessary for achieving this vision (63).⁷ Of these, the ones related to the primary-care workforce, primary-care research, and monitoring and evaluation are particularly consistent with our experience in Crete. Given the substantial evidence that was presented in the recent Global Conference on Primary Health Care, together with the conclusions drawn from our local experience, we believe there is a need to radically reorient health systems towards primary health care and maximize synergies with public health to address wider socioeconomic issues and other important upstream determinants of health. Last but not least, we believe there is an unmet need to expand research and training activities in relation to primary health care and public health, with the main focus being to introduce a wider dialogue, which moves well beyond academia.

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⁷ The thirteen levers in the WHO/UNICEF report are (i) political commitment and leadership, (ii) governance and policy frameworks, (iii) adequate funding and equitable allocation of resources, (iv) engaging community and other stakeholders to jointly define problems and solutions and prioritize actions, (v) models of care that prioritize primary-care and public-health functions, (vi) ensuring the delivery of high-quality and safe health-care services, (vii) engaging with private-sector providers, (viii) the primary-care workforce, (ix) physical infrastructure, and appropriate medicines, products and technologies, (x) digital technologies, (xi) purchasing and payment systems, (xii) primary health-care-oriented research and (xiii) monitoring and evaluation (63).

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ANNEX. SELECTED CSFM COLLABORATIVE RESEARCH PROJECTS FOCUSED ON THE INTEGRATION OF PUBLIC HEALTH INTO PRIMARY HEALTH CARE

Project name and website	Aim and main focus	Outcomes	Tools
The EU-WISE project: "Self-care support for people with long-term conditions, diabetes and heart disease: a whole system approach" Website: https://cordis.europa.eu/project/rcn/101808_en.html	EU-WISE is an FP7 programme designed to focus on understanding capabilities, resources and changes in health-related practices in communities and cultural contexts across Europe	Development of a community-based strategy for illness-management resources and shape interorganizational networks	The EU-GENIE intervention/online tool was developed to raise awareness of social networks. GENIE has contributed to capacity-building by providing trained personnel, tools and resources for suitable use and implementations in the local settings (see https://www.clahrcprojects.co.uk/impact/projects/genie-online-social-network-tool-generate-engagement-self-management-support for more information)
The RESTORE project: "REsearch into implementation STrategies to support patients of different ORigins and language" Website: https://fp7restore.eu/	Project no. 257258 is an FP7 programme conducted in six European health-care settings with different organizational contexts and capacities, aiming to "optimise medical and psychosocial primary care for migrants in Europe with a particular focus on communication in cross-cultural consultations"	Review of the guidelines and training initiatives in primary care Assessment of the success of translating these guidelines into practice Assessment of the capacity of primary-care settings to incorporate implementation processes Evaluation of the sustainability of implementation processes	Application of innovative scientific methods (normalization process theory and participatory learning and action) in research in primary-care settings to make a real impact on cross-cultural health-care consultations
The SPIMEU project: "Determinants of successful implementation of selective prevention of cardio-metabolic diseases across Europe" Website: https://www.spimeu.org/	Project proposal no. 663309 is funded by the Third Programme for the Union's action in the field of health (2014–2020) and is a trans-European research project aiming to contribute to the reduction of cardiometabolic diseases in EU member states	Overview of currently practiced models of implementation of selective prevention in all 28 EU member states Design of selective prevention programmes tailored to the context in five EU member states	A toolbox containing relevant measures for a tailored implementation of a selective prevention programme in all 28 EU member states The RAPA (Rapid Assessment of Physical Activity) tool for the assessment of physical exercise HeartScore (for more information, see https://www.heartscore.org/en_GB/)
The FRESH AIR project: "Free Respiratory Evaluation and Smoke-exposure reduction by primary Health cAre Integrated gRouPs" Website: https://www.theipcr.org/freshair/	Project proposal no. SEP-210248848 is a three-year programme funded by Horizon 2020, aiming at improving prevention, diagnosis and treatment of chronic respiratory diseases in low-resource primary-care settings by using implementation science and evidence-based interventions	Assessment of the health economics impact of asthma/COPD Characterization of local contexts regarding chronic respiratory diseases (beliefs, perceptions, behaviours) Development of awareness-raising interventions Remote training and feedback in spirometry for primary-care providers Training of primary-care providers in "Very Brief Advice" on smoking Implementation of pulmonary rehabilitation programmes in primary care Assessment of local situations on childhood cough and asthma/wheeze Creation of stakeholder engagement groups	A knowledgebase including <ul style="list-style-type: none"> · databases · awareness-raising tools (including flip-over, posters, presentations) · training modules (in lung-function testing, "Very Brief Advice on Smoking", pulmonary rehabilitation) · educational materials (for patients and health-care professionals) · equipment and infrastructure (for lung-function testing and pulmonary rehabilitation)

Project name and website	Aim and main focus	Outcomes	Tools
<p>The TiTAN-Crete project: "Tobacco treatment TrAining Network in Crete"</p> <p>Website: https://titan.uoc.gr</p>	<p>TiTAN-Crete is jointly conducted by the CSFM and the Division of Prevention and Rehabilitation at the University of Ottawa Heart Institute, Ottawa, Canada, with funding from Global Bridges; the goal of the project is to develop a network of trained primary-care providers in Crete, Greece, who will integrate treatment of tobacco dependence into daily clinical practice and become champions of tobacco control policy</p>	<p>Assessment of changes in Cretan primary-care providers' attitudes, knowledge, self-efficacy and rate of tobacco treatment delivery after exposure to TiTAN</p>	<p>Primary-care training modules Case study video series A patient quit plan booklet A primary-care toolkit containing</p> <ul style="list-style-type: none"> - a tobacco-use survey - quick reference sheets - smoking cessation consult forms
<p>The TiTAN Greece & Cyprus project</p> <p>Website: https://titangc.uoc.gr/en.html</p>	<p>TiTAN Greece & Cyprus was launched in 2017 with a second grant from Global Bridges; its goal is to scale-up the TiTAN network to a national level in both Greece and Cyprus, educate 300 GPs and primary-care professionals in evidence-based tobacco treatment and disseminate tools to support the integration of tobacco treatment into busy primary-care settings</p>	<p>Assessment of changes in Greek and Cyprian primary-care providers' attitudes, knowledge, self-efficacy and rate of tobacco treatment delivery after exposure to TiTAN</p>	<p>Primary-care training modules Booster training A network website Social media An evaluation protocol A patient quit plan booklet A primary-care toolkit containing</p> <ul style="list-style-type: none"> - a tobacco-use survey - quick reference sheets - smoking cessation consult forms
<p>The THALIS project: "UOC-Multidisciplinary network for the study of Alzheimer's Disease"</p>	<p>THALIS was a cross-sectional, multicentre study conducted in 14 primary-care settings in Crete in 2014 and was funded by a grant from the EU European Social Fund and by Greek national funds through the operational programme "Education and Lifelong Learning" provided by the National Strategic Reference Framework (grant code: MIS 377299); it aimed to assess the burden of cognitive impairment among elders visiting primary-care settings, exploring associated risk factors and examining care challenges for primary-care providers</p>	<p>Multisetting and multidiscipline collaboration Integrated services for cognitive impairment</p>	<p>A local database Screening tools (Mini Mental State Examination, Test Your Memory, General Practitioner's Assessment of Cognition)</p>

Project name and website	Aim and main focus	Outcomes	Tools
The EUR-HUMAN project: "EUropean Refugees-HUman Movement and Advisory Network" Website: https://eur-human.uoc.gr	The EUR-HUMAN project aims to enhance the capacity of European member states to address the health needs of migrants and refugees	Development of clinical protocols, guidelines, health education and promotion material as well as a training programme for staff serving refugees and migrants	<p>Online clinical protocols and guidelines in the following areas:</p> <ul style="list-style-type: none"> - cultural competence in health care (Compassionate Care Assessment Tool) - continuity of care (International Organization for Migration Personal Health Record and Handbook) - needed information and health promotion (Migration Integration Policy Index) - triage (Initial assessment and treatment with the ABCDE approach) - mental health (Refugee Health Screener-15 (a 15-item questionnaire)) - mother and reproductive care (Inter-Agency Field Manual on Reproductive Health in Humanitarian Settings) - child health (Refugee Service Toolkit) - communicable diseases, noncommunicable diseases and vaccination (for infectious diseases of specific relevance to newly arrived migrants in the EU/ European Economic Area) <p>Online multilanguage health education training materials for primary-care providers on the following seven topics:</p> <ul style="list-style-type: none"> - acute diseases - legal issues - provider-patient interactions - mental health - sexual and reproductive health - child health - chronic diseases and health promotion <p>(for more information, see https://eur-human.uoc.gr/online-courses/)</p> <p>Additional training material for primary-care providers on the following topics:</p> <ul style="list-style-type: none"> - assessing immediate health-care needs, and triage upon arrival - communicable diseases - mental health - provider-patient interaction - noncommunicable diseases - vaccination coverage - maternal and reproductive health <p>(for more information, see https://www.youtube.com/channel/UCv13kOrEidGv2XA4zAU01Q)</p>

Project name and website	Aim and main focus	Outcomes	Tools
The Cancer Registry of Crete Website: https://www.crc.uoc.gr	The Cancer Registry of Crete aims to systematically monitor cancer surveillance, exporting statistics on incidence, survival and mortality as well as proposing targeted interventions and cancer control actions	Enhancement of cancer epidemiological research (i.e. publication and design of field studies and interventions) Collaboration with international and European associations in setting methodological standards and an inventive research framework on data privacy and mining techniques	Comprehensive digital monitoring system Big database