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What challenges do hospital directors in two Mediterranean countries perceive in implementing climate-smart healthcare? A qualitative study

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Contents

List of Acronyms Used

COVID19 – COronaVIrus Disease appeared in 2019
CSHC – Climate-Smart Health Care
ECHO – European Climate and Health Observatory
EEA – European Economic Area
HC – Healthcare
HCO – Healthcare Organisation(s)
HCHW – Health Care Without Harm
GHG – Green House Gas
MPF – Multipolar Performance Framework
NGO – Non-Governmental Organisation
PV – Photovoltaic
SDGs – Sustainable Development Goals
WHO – World Health Organisation

Abstract

Background: Hospitals directors are an important group of healthcare leaders strategically placed to implement public health policies relating to healthcare provision, such as the emerging climate-smart healthcare. This type of healthcare combines both mitigation and adaptation practices, and its timely implementation is of utmost importance for the significantly climate-impacted area of the Mediterranean. Qualitative research, although scarce in this nascent policy area, has yielded some initial insight into the challenges and opportunities in the field. We used this tool to shed more light on the challenges perceived by these stakeholders at the frontline of the policy implementation with a view to informing actionable healthcare policies in the area.

Methods: Five semi-structured in-depth interviews with hospital directors on the topic of climate-smart healthcare implementation in the Mediterranean were conducted. The nature of the research was principally descriptive and explorative, looking to investigate their perception of the challenges and opportunities related to climate-smart healthcare. A thematic analysis of the transcribed interviews was carried out and this information was examined in context with the current health and climate policy landscape in the respective countries.

Results: Three main challenges in the implementation of climate-smart healthcare policies were identified. First, the lack of awareness of the healthcare's contribution to climate change among the hospital directors and the wider society. Second, the absence of comprehensive climate mitigation and climate resilience practices from the current healthcare policies. Third, the poor cooperation between the different sectors at local, regional and national level, that results in long delays in the completion of the sustainable healthcare projects.

Conclusions: Health policies in the sustainable healthcare field need to be informed by both quantitative and qualitative research. The present qualitative study, focusing on two Mediterranean countries, showed the need for more comprehensive policies that include both climate mitigation and climate resilience practices. Also, it highlighted the importance of raising awareness among stakeholders and supporting intersectoral coordination for the effective and timely implementation of these policies. Large-scale mixed methods research involving more countries and the majority of the relevant stakeholders, not only hospital directors, is strongly recommended for more insightful data that could help design timely and actionable climate-smart healthcare policies.

Preface

The big picture revealed the greatest threat

As a respiratory physician, I knew very well the adverse health effects of air pollution. My strong desire to prevent these effects was behind my decision of a career change from clinical to preventive medicine and public health.

However, it was during my studies for a Master of Public Health that I realised that air pollution mitigation is closely linked to action against climate change. And that climate change has now become the biggest public health threat of our century. Earth's climate is the big picture, the bedrock for our survival and well-being as species on the planet.

Consequently, I was oriented toward climate and public health policies, and this brought me to the non-governmental organisation (NGO) I chose for my internship in the field of climate-smart healthcare.

Health Care Without Harm (HCWH) Europe is the European branch of an international NGO that puts healthcare at the centre of the action against climate change, aiming to lead by example. It was there where I heard for the first time about the climate-smart healthcare provision, and I had to educate myself on the topic and the associated terminology. Climate-Smart Health Care (CSHC) refers to healthcare that operates in a way that mitigates climate change while being resilient to the effects of climate change. And this is on top of providing good quality and equitable healthcare services. It may sound ideal, but it is, in fact, critical for the survival of our health systems and the promotion of the population's health.

In our era of urgent climate action, the effort for quality, equitable healthcare that alleviates climate change and is climate-resilient represents the ultimate challenge. And this is exactly where the need for an appropriate health policy comes into the spotlight.

"If you want to learn about the health of a population, look at the air they breathe, the water they drink, and the places where they live."

Hippocrates, "Air, water and places" 5th century B.C.

Introduction

Why timely climate-smart healthcare policies in the Mediterranean?

Our health is closely linked to our environment. Every aspect of our health, physical, mental and social, is affected by the places where we live, work or spend our free time. This was a realization made very early by the ancient physicians in Greece and rings true many centuries later. In our age, the environment is dramatically affected by what we call the changing earth climate. Not so many years ago, scientists concluded that the earth's changing climate due to human activities is the biggest global health threat of the 21st century (Costello et al., 2009).

Public Health stands at the heart of the issue, as it is remarkably affected by climate change. Indeed, healthcare services are at the forefront of addressing the health impacts of climate change. Extreme weather events, such as prolonged droughts, heatwaves, wildfires, floods, but also vector-borne epidemics related to the changing climate affect every aspect of our health, physical, mental, and social (Climate Effects on Health | CDC, 2021; Haines, 2004; Watts et al., 2021). Moreover, these events increase the demand for healthcare services while frequently, disrupting the optimal delivery of these services (World Bank, 2017).

But there is another, less discussed aspect of healthcare services: their carbon footprint, which contributes significantly to climate change. According to a comprehensive assessment published in 2019 by an international NGO, healthcare on a global scale is responsible for approximately 4.4% of Green House Gas (GHG) emissions (Health Care Without Harm, 2019). This realisation has prompted calls and initiatives worldwide for sustainable healthcare that has a low-carbon footprint and is climate-resilient, aptly named "climate-smart" healthcare (World Bank, 2017).

While all countries on the planet have both contributed to, and are impacted by, climate change, in the Mediterranean region, where the climate crisis impact is very severe, the need to act now is more pressing than ever. The health and the healthcare sector here are affected significantly by intense heatwaves and cold spells, vector-borne diseases, like the West Nile virus, and poor air quality (MedECC, 2020). A recent policy overview carried out by the newly introduced European Climate and Health Observatory (established in 2021) showed that the national adaptation

strategies and plans in 37 countries of Europe, including the European countries of the Mediterranean, are quite heterogeneous and not comprehensive (Climate Change and Health: Overview of National Policies in Europe — European Climate and Health Observatory, n.d.). This is particularly concerning since climate change is a global crisis requiring timely and concerted effort at the international level.

To examine health systems strengthening against climate change, I have focused on the leadership/governance block of the WHO's building blocks framework for health systems because this provides the basis for the policy and regulation for all the other blocks (World Health Organization, 2010). Then, I followed the Multipolar Performance Framework (MPF) approach for healthcare organisations (HCO) to examine the dynamic interactions and the need for alignment between the four basic functions of the HCO, interaction with the environment, maintaining positive values and organisational culture, service provision, and goal attainment (Marchal et al., 2014). This quite comprehensive framework supports the concept that the optimal performance of an HCO is based on the alignment between the above functions.

In particular, the interaction with the "environment function" is considered to be "responsiveness to population needs, to health systems demands and to relevant societal and political influences" (Marchal et al., 2014). This puts the current health and climate policies in the picture and underscores the need for alignment between this and the other three functions to achieve good outcomes. In a healthcare care organisation, such as a hospital, the task of alignment to improve performance falls under the responsibility of a hospital director.

This is why this thesis explores the perceptions of hospital directors in the Mediterranean on the topic of climate-smart healthcare implementation, which includes both climate mitigation and climate resilience practices. Hospital directors are healthcare leaders who are strategically placed to effect change in healthcare practice (Weber & Joshi, 2000). Their duties include implementing top-down healthcare policies but, also, providing feedback on these policies and advocating for good practice, such as quality improvement and sustainability. Moreover, they are given room for initiatives on this front, provided they are compatible with the current national health and climate policy framework. Finally, they are closer to the community they serve and its needs and concerns, compared to the governmental or highly placed decision-makers. Therefore, they can sense and react quicker to societal mandates, like the one for timely climate action.

A non-systematic literature review (papers in English only, grey literature excluded) revealed very few qualitative studies on the topic of climate-smart healthcare implementation in this area of Europe. In a literature review by Sepetis (2019) on sustainable HC management in the Greek HC sector, a few articles were identified that explain how sustainable policies and management have

been incorporated into the HC system. There is mention of cost being the main barrier perceived by both public and private hospital directors for embarking on sustainable projects. Moreover, the author lists the reasons cited by both public and private hospital directors for pursuing the implementation of the above policies. In the public sector, these reasons include saving money, increasing employee satisfaction and retention, managing risk, improving facility operations, pursuing performance excellence, and demonstrating the environmental, corporate social responsibility and governance issue. In the private sector, the focus is mostly on increasing the hospital business value in the market and the reasons cited here are: margin profit increase, long term licence to operate, promoting good will, brand name and reputation, enhancing capital investment for the development of new innovations, enhancing capital investment in know-how and human skills development, and finally, ensuring stable and low interest rates (Sepetis, 2019).

Another paper presents a case study of sustainable development in healthcare facilities comparing a Swedish and a Greek hospital, using both quantitative and qualitative data (Tsioumpri et al., 2020). The aim of the paper is to examine the knowledge and habits of hospital personnel on sustainable healthcare operation, and to compare their practices in this field. Interviews were conducted with some of the departmental directors (Technical Service, Oncology Clinic, Protocol, and Clinical Studies) and the person in charge of personnel commute. Moreover, 104 employees from different hospital departments answered a questionnaire on their knowledge about healthcare facilities' contribution to climate change, sustainable development, green procurement, and specific professional attitudes towards sustainability in their hospital. The study shows that there are some sustainability measures in place in the Greek hospital but there is no designated department or personnel responsible for environmental issues, as is also the case in the Swedish hospital. The staff seem to have ecological awareness, to an extent, but this does not translate into achieving the various sustainability objectives. The authors remark that it is necessary to establish a common culture for all workers to effectively support any relevant initiatives, highlighting one of the challenges in sustainable healthcare implementation (Tsioumpri et al., 2020).

The above challenges are also mentioned in a qualitative study on the general topic of public health engagement in addressing climate change. The study employed in-depth interviews with public health and climate change professionals in the State of California and identified both barriers and opportunities. The barriers include individual perceptions that climate change is not urgent or solvable and insufficient understanding of climate change's health impacts. Moreover, there are institutional barriers, such as a lack of public health capacity, authority, and leadership; a narrow framework for public health practice that limits work on the root causes of climate change and health; and finally, compartmentalisation within and across sectors. On the other hand, opportunities include integrating climate change into current public health practice, providing inter-sectoral support for climate solutions with health co-benefits, and using a health frame to engage

and mobilize communities. Lastly, the authors conclude that efforts to increase public health sector engagement should focus on education and communication, building leadership and funding, and increasing work on the shared root causes of climate change and health inequities (Gould & Rudolph, 2015).

In addition, feedback from a variety of New York State stakeholders at the junction between climate change and heath policies provides further insight on the challenges and suggested adaptation planning (Eidson et al., 2016). Analysing two follow-up surveys, they found that about one third of state health program directors believed that climate change would impact their program priorities. Less than half of state health leaders said they had sufficient information about climate and health compared to 17% of local health department leaders. Moreover, only 23% of the latter were incorporating or considering incorporating climate and health into planning compared to state health leaders (55.8%). This highlights the significant gap in perceptions and climate action between these two groups of stakeholders. Finally, the stakeholder groups agreed on the four highest priority adaptation categories, some of them also mentioned in previous studies: surveillance, coordination/collaboration, education, and policy development (Eidson et al., 2016).

The present research aims to obtain insight into the matter by exploring the perceptions of a group of healthcare leaders in an area where research is scarce. The results of this study can help inform optimal policy design, support, and advocacy necessary to assist with the much-needed swift implementation of climate-smart healthcare in the Mediterranean.

Methodology

Design

This is a qualitative research study based on primary data collected from semi-structured in-depth interviews with hospital directors. Focusing on the climate hotspot of the Mediterranean region, the initial selection included five European countries in the Mediterranean (Cyprus, Greece, Italy, Portugal, and Spain). The choice of these countries was influenced by my Greek nationality in combination with my policy advocacy duties for healthcare decarbonisation in the same countries (apart from Cyprus), during my internship at HCWH Europe.

Data collection occurred during the period I was working as an intern with HCWH Europe. No other data from existing HCWH research or other projects was used for my thesis. I was given permission to use my personal HCWH email and signature during the email outreach to possible informants. My professional supervisor put me in contact with one of the Greek directors of a hospital that is a member of the HCWH network, and this person agreed to participate in the study.

Also, my professional supervisor and her line manager reviewed my thesis framework and the interview guide, and offered useful feedback. For example, they suggested that I use specific terminology depending on the country, since the different stakeholders in each country do not have the same understanding of the term “climate-smart” healthcare. Indeed, I found out that in Greece, they use the term “climate adaptation for healthcare”, whereas in Portugal and Spain they are familiar with the term “sustainable healthcare”.

Sampling

The sampling strategy involved contacting hospital directors and deputy hospital directors in both public or private hospitals in each of the five included countries, starting from the ones in the capital and larger cities and spreading out to the provincial level. The resulting range had tertiary and university hospitals on one end and secondary community hospitals on the other. This was a non-purposive sampling method since I had no knowledge if the hospital directors were engaging in climate-smart healthcare or not. Due to time constraints, directors of regional primary healthcare centres and local community health centres were not included in the sample.

Over a period of 6 weeks, between the 7th of April and the 16th of May 2022, the hospital directors were contacted directly using their professional electronic addresses, found on the official hospital website. It should be noted that several hospitals from these five countries do not have an email address for their hospital directors; instead, they have a secretarial email or a general email address for communication with the public. I used my capacity as an MPH candidate at EHESP for some of these emails (N=14), but for most of them (N=26) I used my capacity as a Climate Policy and Projects Assistant at HCWH Europe. The emails had a similar format (see Appendix A) with minimal changes to make them slightly personalised, depending on the hospital. The emails were written in English for the directors based in Italy, Portugal, and Spain and in Greek for the directors based in Cyprus and Greece.

Recruitment

During the recruitment phase, I asked my academic supervisors, my professional supervisor, and some of my tutors for advice to increase the possibilities of directors’ participation in the study. One of them suggested that I should phone them or their secretaries before I send any emails. I used this approach in Greece with some good results. In four cases, the secretary provided me with an email address for the director that was not on the hospital’s website, and in two of these cases, I had a positive reply from the hospital directors. Unfortunately, this did not work in the other countries. Another tutor suggested asking the directors who agreed to participate to propose one of their colleagues. This helped me recruit one of my informants. My professional supervisor at Health Care Without Harm introduced me to one of the Greek hospital directors from their network who

was keen to participate in the research. Finally, one of my school tutors was a hospital director and was very interested in participating in this study from the start.

I deviated slightly from the initial framework in order to increase the possibilities of recruiting more directors: one email was sent to the Health Ministry of Malta at the final stage of the recruitment when I realised that the language barrier could be responsible for not participating in the study. English is one of the official languages of Malta and since the interviews were conducted in English, I found this to be a facilitating factor for hospital directors from this country.

Once the informants agreed to participate in the study, they were sent a detailed email with the interview guide (Appendix B) and the consent form attached, along with a Zoom link for the scheduled interview. The interview guide was indicative and served as a general plan for the interview, however, two of the informants found it useful to answer the questions in writing. The consent form could be signed electronically and returned to the researcher at the director's convenience.

The interviews were conducted online via the Zoom platform, over a period of 6 weeks, between the 26th of April and the 11th of May 2022, and they were recorded and transcribed separately. Two of the interviews were conducted in English, and three in Greek. The duration of the interviews ranged from 39 mins to one hour and ten minutes. Afterward, each video session was transcribed into Microsoft Word documents, with the Greek translated into English during the transcription process. Two of the informants answered the interview guide questions in writing on top of participating in the recorded interview. One person answered all the questions because they felt they could express themselves better in writing, and the other only answered the last three questions in writing because we ran out of time during the formal interview. They both sent their answers back via their personal emails. These written data were extremely useful. On one hand, they complemented the data collected from the other participants, thus allowing for a more comprehensive material. On the other hand, they offered a unique opportunity to compare data collected through two different methods: open-ended questionnaire versus in-depth interviews, illustrating the benefits and drawbacks of both methods.

Analysis process

The careful and iterative reading of the transcripts and the answers to the interview guide revealed four specific themes, two deriving directly from the interview questions and two emerging themes.

The themes were used to create a codebook with two topical and two interpretive codes (Annex C). The two topical codes were: Climate Change and Healthcare Knowledge (CCHCKnowledge) and Climate-smart Healthcare Knowledge (CSHCKnowledge). There was further division into

subcodes, two for the first code, Climate Change and its Impact on Healthcare (CCHCImpact) and knowledge of the country's Climate and Health policies (CCHealthPolicies). The second topical code was divided into six subcodes, all related to climate-smart healthcare:

- relevant studies on this type of healthcare (CSHCStudies)
- current or previous projects in this field (CSHCProjects)
- challenges (CSHCChallenges) during the implementation
- opportunities (CSHCOpportunities)
- perceptions of the kind of help they need (CSHCHelp) and
- thoughts on who should lead the effort for the transition to climate-smart HC (CSHCLeadership)

Lastly, the two interpretive codes were: one relating to the professional and academic background of the informants and their engagement in climate-smart HC projects (Professional background), and the other connecting their perceptions of their country's climate and health policies to their motivation to adopt sustainable HC practices (Country's policies).

The software used for this analysis was Microsoft Excel because the number of informants was small and the necessary information could be organised easily in Excel, allowing clear identification of relevant themes. This is explorative and descriptive qualitative research, and the results are presented in a narrative form. They are further analysed and discussed in the context of current health and climate policies in the respective countries of the Mediterranean, taken from a recent policy analysis by the European Climate and Health Observatory (ECHO). The analysis was conducted with the objective of outlining the health and climate change policy landscape and identifying policy gaps in this area. It is open-access on the ECHO's website and contains both an overview of the results and country-specific information (Climate Change and Health: Overview of National Policies in Europe — European Climate and Health Observatory, n.d.).

No Ethics Committee approval was required for this research study, according to the school's protocol.

Results

Characteristics of the participating hospital directors

To recruit the five informants who finally agreed to participate in this study, a total number of 40 emails were sent to hospital directors in the five Mediterranean countries (Cyprus, Greece, Italy, Portugal, and Spain) plus Malta. Only nine replies were received, five of which were positive. One email expressed the unavailability of the hospital director to participate, and another email stated that the request had been relayed to the appropriate hospital department with no further follow-up. Finally, two emails required extra documents and procedures to approve the participation of the

hospital directors in any kind of research, according to the hospitals' protocol. These requests could not be fulfilled due to the time constraints of the study.

The characteristics of the participating hospital directors can be seen in Table 1.

Code Term	Age Group	Gender	Country	Hospital Type	Term
HD 1	46- 60	F	Portugal	Private	> 3 years
HD 2	46- 60	F	Greece	Public	3 years
HD 3	30- 45	F	Portugal	Private	> 3 years
HD 4	30- 45	M	Greece	Public	3 years
HD 5	30- 45	F	Greece	Public	3 years

Table 1. Demographics of the informants

In Portugal, the two directors were employed in the same central tertiary hospital, although in a different directorate. In Greece, all the informants worked in regional secondary hospitals. There was no hospital director from a university or military hospital. Also, all hospitals were general hospitals, one was private, and the rest were public.

In Greece, the three public hospital directors had a three-year term in office with the possibility of renewal, while the two directors from Portugal had a long-term post in a private hospital.
The list of their duties in both sectors was quite long. Only one director from the private sector mentioned three focused areas of duties: management of the healthcare team, healthcare provisions, and results. The other four provided more specific duty areas: drafting the hospital's strategic, business and emergency plans; drafting and submitting the year's budget to the board of directors for approval; searching for and securing funding for hospital projects; overseeing the timely implementation of these projects; management of the human and technical resources; monitoring the evolution of management indicators; highlighting deviations and proposing corrective actions; contribution in the definition of strategic activities; identifying business opportunities (private sector); introducing improvements based on patients' satisfaction surveys and lastly, legal representation of the hospital (Greece).

Overall, these duties reflect the neuralgic role of the hospital directors and place them in a strategic position for the introduction, advocacy and implementation of new healthcare policies, such as sustainable healthcare.

Thematic analysis of the in-depth interviews

Three broad themes were identified following the thematic analysis of the transcripts and topical codes: the degree of knowledge hospital directors have on the two-way relationship between climate change and healthcare, the challenges and opportunities they perceive during the implementation of climate-smart healthcare programs, and lastly, their thoughts on who should lead the effort towards sustainable healthcare practice. The first theme includes four subthemes: impact of climate change on healthcare and its reverse, thoughts on the country's health and climate policies, relevant studies on the topic and climate-smart practices in the hospital setting.

1. Knowledge of climate change and healthcare nexus

1.1. Impact of climate change on healthcare and vice-versa

The majority of hospital directors were able to discuss the impact climate change is having on their everyday practice in detail. Only two considered the opposite effect, the impact healthcare is having on climate change, and pointed out that most hospital directors ignore this aspect.

Regarding the impact of climate change on healthcare, both Greek and Portuguese directors mentioned the impact of extreme weather events, such as heatwaves, floods, and snowfalls. They explained that these events tend to increase the number of patients admitted to the hospital due to health conditions that are exacerbated either directly or indirectly by the above circumstances: *"we have to be concerned about the more extreme times of the year, in the winter, or in the summer, we are concerned and we, typically, tend to be prepared for an excess of patients during those periods of time"* (HD 1). One director mentioned a number of non-communicable diseases, climate anxiety, and the recent COVID19 pandemic as direct climate change impacts: *"in my sector we have many cases of asthma, chronic obstructive pulmonary diseases, cardiorespiratory problems, heart attacks, heat strokes, heat stress, neoplasms… We also see cases of climate anxiety recently, we have cases of infectious diseases…COVID is another example of the impact on our practice"* (HD 2). Another included road traffic accidents as one of the indirect consequences of extreme weather: *"we mostly have car accidents due to the heat; I know cases where a person felt unwell because of the heat and caused an accident…Mainly due to accidents, in cases such as heavy snowfall or rainfall, mostly traffic accidents"* (HD 5). The same director mentioned disruptions in the optimal functioning of the hospital such as road damages or blockages cutting the hospital off, or even damages to the hospital buildings and equipment. Increased energy consumption due to the frequent use of air-conditioning units during the heatwaves and the resulting high costs were also reported by some hospital directors.

On the other side, one Greek director remarked that hospital directors, in general, rarely make the link between climate change and healthcare practice: *"A hospital director, in the framework of his*

daily duties, does not deal with climate or the environment. […] we are quite behind in this area, we do not always make the connection between health and the environment, we don't make the link with climate change… we can say the heat, let's focus on tackling the heat…the rainfalls and the floods, we are not at this point yet" (HD 4). A director from Portugal also commented: *" in terms of health, they do not see the connection…They think health will deal with the consequences of the problem, they are not part of the creation of the problem"* (HD 1).

1.2. Opinions about the country's climate and health policies

Most of the interviewees were familiar with emergency plans to address extreme weather events and monitoring and surveillance programs for possible epidemics related to the changing environmental conditions. They mentioned a special focus on the hospital infrastructure, the technical equipment, staffing levels, but also, research at the climate and health intersection: *"the main focus here is on the healthcare infrastructure, the technical equipment and the personnel that will support the care and treatment of the extra numbers of patients.[…] In Greece, the current policies, as I perceive them, invest in research for health and climate change, also in monitoring and surveillance… in order to understand better the need for climate adaptation and the capacities we have for this adaptation. They secure funding for the development of climate-resilient health systems"* (HD 2). Moreover, all directors had waste management plans in their hospitals according to the national policies. The ones based in Greece mentioned regular training sessions organised by the State on the preparedness for extreme weather and updates on the policy of the national energy upgrade program: *The regional civil protection conducts regular meetings, teleconferences on the topic, we have another one coming up this Friday, we have already discussed about the floods. There are emergency plans and we know what needs to be done by each sector"* (HD 5). *"As hospital directors, we receive some information and updates from the Ministry of Health from time to time, once every 6 months, the topic of environment features in the energy upgrade projects, so we learn what this is energy upgrade is, we get informed about the procedures to obtain permission for this..."* (HD 4).

Interestingly, almost all of them remarked that the existing policies mostly address the consequences of climate change and to a lesser extent, the root causes of the problem. Some typical comments made were: "*We have plans, we have national plans for the extreme cold, for the extreme heat, but how can I say it…. we do it reactively, we don't do it proactively.* We *are trying to build resilience in all the healthcare units rather than being concerned about the reasons why, the root causes of these conditions and we are going to act here and here and here"* (HD 1), *"We act too late, we are not proactive"* (HD 2), *"of course, this plan does not include any preventive measures"* (HD 5). Lastly, one director found that these policies do not prepare the healthcare system adequately for the extreme events related to climate change: "*I was saying that we address*

the extreme events as they come, but we do not …. prepare for them, we don't have this logic" (HD 4).

1.3. Climate-smart healthcare studies

All participants admitted that they had not studied or received any formal training on sustainable healthcare interventions. They had different educational and professional backgrounds: one had a degree in Psychology with a Master's degree in Healthcare Management, another had a degree in Business Management, and another a degree in Business Economics. Two of them were engineers, a technical engineer with studies on sustainable mobility and human-centred, environmentally friendly technical infrastructure, and a physicist with a Master's degree in Electric Engineering and a Ph.D. in Environmental Law. All of them had worked in the past or were currently working in the private sector. The public hospital directors all had experience in private businesses, two of them were owners of such businesses in the past.

Only the technical and the electric engineer mentioned formal studies in the field of sustainability but without a special focus on healthcare. One of the others said that they had received some training on hospital waste management on their own initiative: *"I proactively wanted to learn a little bit more about hospital waste because I think that it is the main problem, it was a personal initiative"* (HD 1). One of the Greek public hospital directors commented: *"No, no this education does not exist. I don't want to be rude but what you are describing does not exist"* (HD 4). Finally, one hospital director admitted with some regret that they have never received any kind of education or training on the climate-smart healthcare practices: *"No, no we don't talk about that. I think, nowadays, we talk more than when I was in school… unfortunately no…"* (HD 3).

1.4. Climate-smart Healthcare projects

This subtheme examined the type of climate-smart healthcare projects, present or past, in their respective hospitals. On the climate-mitigation front, they all mentioned hospital waste management programs; however, only one of them explained that they specifically calculate the GHG emissions related to the hospital waste management and try to reduce them according to a predefined roadmap. This director elaborated further on this theme, saying that they have established a Carbon Management Team in their hospital, which supervises the effort toward net-zero carbon emissions across the three Scopes and conducts yearly evaluations of their progress. The three Scopes are areas related to the source of GHG emissions: Scope 1 refers to the direct emissions from health care facilities, Scope 2 includes emissions from direct purchases of energy, and Scope 3 is all other supply chain emissions (Eckelman et al., 2020). On the same front, one director mentioned the use of renewable energy sources, such as photovoltaic (PV) systems, to

cover a part of their energy needs and another said that this energy source is in the pipeline for the immediate future.

Apart from the above projects, the hospital directors described several climate mitigation interventions. Creating green and blue spaces on the hospital grounds and around the hospital was one of them. One of the hospital directors from Portugal showed me some of these spaces in the hospital's inner yard and on the rooftop during our videoconference call. The ones based in Greece extensively analysed their energy upgrade and efficiency programs concerning the hospital buildings, the technical equipment, and some medical devices. Also, they talked about minimising paper use through the digitalisation of patient records, going completely paperless whenever possible. Reducing water and electricity consumption, use of environmentally friendly disinfectants, procurement of sustainably grown foods with low-carbon footprint and recyclable food packaging featured in their climate-mitigation activities. A special mention was made about the training of their personnel on climate-smart practices, something that all hospital directors considered paramount for the success of these projects.

As far as the climate-resilience front is concerned, the main programs in place were the specific emergency plans for the extreme weather events. These plans included provision for adequate bed capacity and staffing levels but one can argue that many of the climate-mitigation projects can also have climate-resilience properties. For example, improving the energy efficiency through the insulation of hospital buildings leads to reduced electricity consumption during the climate extremes making the hospital resilient to such conditions. Similarly, the green and blue spaces that favourably change the microclimate of the area and the use of renewable energy sources can also help reduce the energy needs and the dependency on fossil fuels. This provides significant resilience in times of high energy demand due to heatwaves or disruptions in energy supply lines because of wildfires, floods, and storms linked to the changing climate.

2. Challenges and Opportunities during project implementation

Regarding the perceived obstacles, the hospital directors mentioned different challenges depending on their sector, private or public. The ones working in the private sector mentioned that cost and approval from the board of directors could be an issue: *"In terms of being green, you see, it might be more expensive…we all have to balance between the profits and the response at the owners of the business, our board of directors, I mean we have objectives that we have to comply with"* (HD 1). Moreover, they said that there is usually a short timeframe to deliver results in the private sector, while many of these projects require a long-term commitment and show their results in the medium to long term: *"it is not very easy to make these decisions because again you have*

small timeframes to make sure that you want to reach your goals. It is not ok, it is not an annual budget, it is a five-year budget the most, you have to make sure that you can prove that you can be profitable" (HD 1).

On the other hand, in the public hospital, the biggest challenge reported by the Greek hospital directors is the bureaucracy of the public sector, the centralisation of the decision-making process, and the poor coordination between the responsible authorities. All the above can result in dramatically long delays or even rejection of some of the projects. One director stressed: *"These are the biggest challenges... we have a very comprehensive legal framework, adapted to the European directives, but it takes time to learn it adequately and then plan and adjust your practice to it. I have to wait many months for the simplest approval"* (HD 2). Another director agreed: "*Yes, it is taking very long and even if I am trying to press the authorities, I feel that we are stuck in bureaucracy"* (HD 5). Two of them highlighted the absence of smooth cooperation with other sectors/authorities: *"this is one of the challenges we had, the ministry of Energy rejected the plan because the organisation responsible for the exploitation of the electricity from renewable sources cannot absorb the excess amount of electricity that we could possibly produce"* (HD 2). And: *"Waste management and recycling are the responsibilities of the municipality, we cannot manage the waste on our own, we need to cooperate with them"* (HD 4).

In addition, both private and public hospital directors describe the change in culture among their colleagues and employees as one of the key challenges in the smooth implementation of the required climate action. One director from Greece reports: *"The challenges we had were to persuade the people, our staff that this is worth doing"* (HD 4). Another describes this cultural shift as "*the first biggest help*" highlighting its challenging nature and the importance of teamwork in bringing about change: *"this change in culture, especially around climate change, is the first biggest help. My colleagues and my employees"* (HD 2).

Finally, a Greek director mentioned their short-term tenure as another challenge: *"I would like to highlight one more challenge in our work in Greece. It is the duration of our practice as hospital directors. It is three years, and you can renew it, of course, but it also depends on your political affiliations, if you have elections, you may have to go earlier, and your work will be picked up by the next one"* (HD 2). However, another director saw the same challenge in a different light. He considered his time in office as a chance to build something that would outlive his tenure: *"the 3-year duration of my term in office… Well, this can be prolonged, it is possible. However, the thing I want to bring to this hospital is a sustainability project that does not belong to me but to the hospital. […] we want to keep it, exactly because when the hospital director changes, we can continue our work on this area"* (HD 4).

On the opportunities front, there were distinct differences between the private and the public hospital directors but also a few similarities. The public hospital directors, all based in Greece, mention the multiple funding programs in place to support climate-smart interventions in their hospitals*: "Now, for the opportunities, we have the funding programs, that are many, if you know how to search for them. It is not only the main program, the ESPA. Greece received about 27 billion euros [from European funds] for the Ministry of Development, 9 of these 27 billion went to Health for horizontal programs"* (HD 2). Another was proud of not using money from the hospital's budget for the sustainable healthcare*:" we have not burdened the hospital's budget. All these are very very important because we do not take money from other projects to do them.[…] And not only this but also CISCO International gave a grant of 150,000 euros to the hospital for innovative projects on automatization and environmental management. We can see that all this, is attracting external investors too. I must tell you that the hospital so far has paid nothing for all these projects"* (HD 4).

One Greek public hospital director considered the recent energy crisis as an opportunity for transition to environmentally friendly energy sources in their hospital: *"especially now with the high energy prices for gas and electricity. We are oriented towards alternative and renewable energy sources. […] And it is an opportunity now, because of the high energy prices. You know sometimes we are forced to change by the circumstances as we did with the COVID19. Maybe, the energy crisis will make us think differently so that we change our habits"* (HD 5).

Somewhat paradoxically, the opportunities identified by the hospital directors in the private sector were not related to financial support or benefits. The predominant trend here was how to become more competitive and appealing to society compared to other healthcare organisations, which in turn can attract more people to their hospital and increase their revenue. In this context, the appeal of becoming environmentally sustainable was seen as an opportunity: *"if more people were sensitive to this issue of being green, I think that it could be the motto for making us different from the other competitors"* (HD 1). Moreover, one director from this sector referred to the opportunity for private healthcare to lead the transition to climate-smart healthcare by example: *"to be an example for other organizations, for employees who do not participate and for our families"* (HD 3).

The changing mentality of the society toward the environment was also seen as an opportunity by the hospital directors from both sectors. One private hospital director remarked characteristically: *"the main opportunity I see, is the fact that we are renewing the generations. […] the green issue will also be a very important part of their daily living. So, I think that this next generation which is now reaching the time of their lives where they are going to work in the healthcare sector […] they are much more personally involved in the solution of the problem. I would say that this is the main opportunity"* (HD 1). Another director from a Greek public health hospital added: *"And thankfully,*

society's mentality is changing. […] There is a change in the mentality of the people, maybe it should be better organised by the decision-makers, the local authorities" (HD 5).

The hospital directors would also ask for help to overcome these challenges from a number of stakeholders. Remarkably, the majority of them want to have society on their side, underlining their close relationship with the wider public, not only the patients. A private hospital director commented: *"everyone must be rational in their actions and must be aware of their practices in order to protect the environment"* (HD 3). Another from a Greek public hospital agreed: "*You need the local society as well. This society should be educated properly because if it is not, it can be a big hurdle in your efforts"* (HD 2).

As for the help from the other stakeholders, the directors highlight the importance of teamwork and mention their immediate circle, comprised of their colleagues and employees: *"First of all, [help] from my colleagues, who should be open to these innovations, they will cooperate with me, they will implement this at my side. […] My colleagues and my employees"* (HD 2). Then, they open the circle to include the regional health authorities, the Ministry of Health, and the local authorities. One director from Greece specifies the kind of help that they mostly need, underlining the previously mentioned challenges: *"The directors and everyone who works there, our cooperation is on daily basis, they should be at your side and help you, expedite things, send the report to the Ministry of Health within a reasonable time. […] The Ministry itself and its staff, they change very often! This is a huge problem. I am in the process of a project and have good communication with the responsible person at the Ministry. And suddenly, I am informed that they have gone away and there is a new person, still in induction for the post, and I get so frustrated! The right person should be in the right position, this is the greatest help"* (HD 2). Also, the same director stressed the need for smooth cooperation with the local authorities, not only the ones related to health: *"you cannot say* that *I will upgrade the energy consumption of my hospital when the regional authority does not fund such projects according to their regional business plan. Therefore, you need the help from the regional authorities, all their members, both political and managerial so that you can have an optimal interaction".* Finally, one Greek director mentions the need for specialised help from certain professional bodies: *"Technical support from specialised authorities or external associates. Specialised authorities are the Technical Chamber of Greece, the regional association of Surveyors- Engineers, KAPE, etc. External associates are professional engineers, mechanics, constructors, surveyors, etc."* (HD 4).

3. Who should lead the transition to sustainable healthcare?

This subtheme refers specifically to leadership in climate-smart healthcare, not help to overcome the challenges. Many of the directors considered themselves as the ones who should lead the

change: *“I believe that we as leaders need to educate the citizens so that they understand the value and purpose of every change we ask them to do for the improvement of our society"* (HD 5). A director from Portugal agreed: *"I think it’s… the top of the hospital… we have this challenge”* (HD 3). According to another private hospital director from Portugal, the Ministry of Health should lead this change in the public sector: *“the Ministry of Health if you are looking at the public sector, and they can lead, they can lead by creating policies, by engaging people, by providing better resources for the ones that comply with the change we want to put in place*” (HD 1).

However, the same director remarked that the answer to the question of leadership, when a change in healthcare practice is concerned, is not always straightforward. A private hospital director from Portugal remarked: *“That’s a very difficult question. Very difficult question. Because in the healthcare sector you have many people leading the daily activities, not being leaders. The economical decision is in the hands of the physicians for instance. Whatever you might decide you have to engage that person, or you won’t be able to do any change”* (HD 1).

The other actors that should lead the transition to climate-smart healthcare according to a Greek public hospital director came from a variety of sectors at high level: “*the leading role belongs to the Ministry of Health. It is this sector that should lead. However, after everything I told you, you realise that this is not the only Ministry that can contribute to the improvement of the public health and health service provision. The Ministry of Education, the Ministry of Agriculture, the Ministry of Environment, the Ministry of Finance that will fund all this change, the Ministry of Development that connects all projects, all of them need to coordinate with the Ministry of Health, in my view. Ah, and the Ministry of Transportation!"* (HD 2). Another director from Greece suggested specifically the local authorities*: "I believe that both the municipality and the prefecture should lead this effort”* (HD 5), while another public hospital director had a more specialised proposal: *“The Centre for Renewable Energy Sources (KAPE) as a state actor with appropriate and vast experience in public projects, staff training, and in managing specialised climate projects"* (HD 4).

Discussion

This study confirms a few of the previous findings on the challenges perceived by stakeholders at the climate and health policy junction and gives some new insights on the topic. These previous findings include differences in perceptions among public and private hospital directors about challenges and opportunities, the lack of awareness of the two-way relationship between climate change and healthcare, the compartmentalisation and poor cooperation among sectors, and finally, the absence of a conducive culture for climate action in healthcare. New findings emanating from this study reveal how a country’s policy context and the stakeholders’ professional background might be at play to influence the engagement in comprehensive climate-smart HC practices. These

results have been combined to produce the following three implications for healthcare policy in the area.

1. Development of comprehensive climate mitigation and resilience policies in healthcare

While previous studies have highlighted the need for policy development on this front that integrates climate change into public health policy (Gould & Rudolph, 2015), our study underscores the need for comprehensive healthcare policies that include both climate mitigation and climate resilience strategies. Climate mitigation is a central, yet overlooked, attribute which current policies deal with partially and not in an organised fashion. This became evident during the review of the relevant policy context in Greece and Portugal and the analysis of the hospital directors' perceptions on the matter along with their reported engagement in climate-smart HC projects.

In Portugal, the primary focus of the health and climate adaptation policies is contingency rather than prevention. The National Adaptation to climate change strategy includes Health as one of the nine priority sectors. Networking with other environmental, security, and social support entities is described in the implementation of the health sector's adaptation plan. Also, the country follows a health management approach based on decentralisation, with Regional Health Administrations preparing their own adaptation strategies. The main Public Health Programs in this adaptation framework are: Contingency Plans for Adverse Extreme Temperatures, Contingency Plans of Seasonal Health, and the Vector-borne Diseases Prevention Programme (Portugal — European Climate and Health Observatory, n.d.).

The above policies do not offer a comprehensive approach to building climate-smart healthcare systems. Healthcare services are seen only as part of the response to the adverse health consequences of climate change and not as contributors to climate change. Therefore, the climate change mitigation angle related to healthcare is completely absent from the policy. This is in keeping with the remarks from the Portuguese hospital directors who took part in our study: the current policy is mainly reactive to the health effects of climate change but not proactive. There is no climate change prevention plan to calculate and reduce the GHG emissions of the healthcare sector. Both directors from Portugal recognise that these policies focus on tackling the emergency and being resilient, but they overlook the root cause of the problem. This consideration is linked to their orientation toward climate resilient projects in their hospital, while structured climate mitigation actions, such as the calculation and reduction of their carbon footprint related to waste management are not mentioned in their programs.

In Greece, the National Adaptation Strategy includes plans for 15 priority sectors, including Health. Again, the principal focus appears to be on identifying and addressing the adverse health consequences of the changing climate. Specific regulations are issued by the Ministry of Health detailing public health measures to be adopted in the event of extreme weather episodes. These episodes are mainly heatwaves, forest fires, sandstorms, floods, and landslides. Moreover, there are monitoring and surveillance programs in place about infectious diseases linked to climate change. On the climate mitigation front, there is mention of a program, the Operational Programme for Competitiveness, Entrepreneurship & Innovation (2014-2020), which supports measures to improve the energy performance of public buildings, including hospitals. (Greece — European Climate and Health Observatory, n.d.)

Overall, we can see that the Greek Climate and Health Policies prioritise healthcare's response to the consequences of climate change. However, despite the absence of a formal climate-mitigation program for healthcare, there are efforts to reduce its carbon footprint through energy upgrade projects for hospital buildings. This could represent a possible gateway to a more organised approach to tackle this overlooked front. It is encouraging that the hospital directors from Greece who participated in the study were aware of the above project and actively engaging in this field. For some of them, this program was the first step toward a more comprehensive climate adaptation for healthcare. One director highlighted the gaps in the existing policies and expressed support for large-scale decarbonisation in the national energy sector, while another described a well-structured climate mitigation program with regular evaluations and yearly progress assessments.

2. Fostering intersectoral cooperation in the implementation of climate-smart healthcare with a long-term horizon

A recurring theme in this study was the challenge resulting from poor coordination within and between sectors, that hinders the timely implementation of climate adaptation programs. This is also something that features in the literature and has already been translated into policy recommendations for effective climate and public health strategies (Gould & Rudolph, 2015; Eidson et al., 2016). Moreover, intersectoral cooperation appears as one of the recommendations for several international public health challenges apart from climate change: food safety (Savelli et al., 2021), pandemics (Debie et al., 2022), and antimicrobial resistance (Jasovský et al., 2016).

The hospital directors elaborated on the central role of the Ministry of Health and the local authorities in promoting this cooperation across sectors to facilitate the realisation of climate-smart HC projects. Their initiatives in the area are a good start but this is not enough. All of them stressed the need for smooth collaboration with other sectors inside and outside their hospital so

that their initiatives can flourish. The directors from Portugal spoke mostly about cooperation with their colleagues and the other employees whereas the Greek directors added the need to coordinate effectively with other sectors and authorities such as transportation, energy provision, environment, and the municipalities.

Moreover, the ones working in public hospitals in Greece mentioned an important parameter which underpins intersectoral cooperation: continuity of practice. The reason behind this is the fact that the public hospital directors in Greece have a three-year term in the office after which they either renew their term or they are replaced. In addition, the team at the Greek Ministry of Health can also change every four years or earlier depending on the political circumstances. These two factors can dramatically affect the progress of any project, especially the climate adaptation programs which require long-term commitment. Interestingly, one of the directors thought of an approach to overcome possible project disruptions from a change in leadership: the creation of a special team in their hospital with the responsibility to oversee the implementation of the project independently from the director or other authority. This idea could be something the policymakers take into consideration, but it helps illustrate the importance of creating favourable conditions for continuous practice in this area.

3. Continuous training of key stakeholders at the climate-health nexus

As previous research has shown (Tsioumpri et al., 2020; Gould & Rudolph, 2015; Eidson et al., 2016), the lack of awareness or the partial knowledge of the relationship between climate change and health is one of the barriers for not engaging in comprehensive climate-smart HC practices. This finding is, also, present in our study. Initially, the focus was to explore the knowledge health directors have on the topic. In this context, we thought relevant to probe for any special studies or any other professional experience in the field of sustainable healthcare. The analysis showed that the professional and educational background of the informants was linked to their knowledge about climate-smart HC and their subsequent active involvement in such projects.

More particularly, the two hospital directors with a background in engineering (technical and electrical) were the ones most engaged in climate-smart projects for their hospitals. Both hospital directors reported that the climate adaptation of their hospitals was at the top of their agenda from the very beginning. The other three directors, with degrees in Psychology, Management, and Business Economics, all had significant experience in the private sector. They mentioned sustainable healthcare in their agendas but not as a priority, and their engagement in relevant programs was less comprehensive compared to the first two directors. Moreover, they expressed a different approach in their management strategy with a focus on short-term results. This could

possibly explain why they prioritise or choose some of the climate actions and they do not report adopting a more comprehensive long-term plan.

Additionally, another finding emerged from the analyses of the hospital directors' perceptions about the challenges in implementing climate-smart HC. All of them mentioned the need for a change in culture around sustainable HC practices. Some of the directors referred to their professional environment, their colleagues and their employees, and others explained that the wider society should also be adequately educated on this subject to help with their work on CSHC. This was one of the most recurrent themes on the perceived challenges, opportunities and help from other stakeholders.

Therefore, the proposed implication for policy is the prioritisation of training and communication on climate mitigation and climate resilient HC. The training could focus, initially, on the stakeholders immediately involved in this practice, such as the hospital directors and other hospital employees, the staff in the Ministry of Health and the regional health authorities. Finally, a communication campaign to promote the policy could help inform the wider public about the need for swift transition to environmentally friendly HC and gather support from this powerful group of stakeholders.

Strengths, limitations, and recommendations for future research

This study provides some insight into the challenges and opportunities hospital directors from two Mediterranean countries perceive during the implementation of both climate-mitigation and climate-resilience healthcare practices. It concords with knowledge from previous studies in this area of healthcare, thus confirming some of the existing perceptions among stakeholders and revealing more aspects surrounding the issue. It focuses on one group of stakeholders but from two countries with different climate and health policies, thus providing more data about the interactions with the policy context. The stakeholders come from a variety of professional backgrounds and work in the private and the public sector allowing for comparison of their perceptions from the angle of education and professional experience.

However, the study has significant limitations. First, the number of participants is small for the geographic area it aspired to cover and for the span of the healthcare sector. It recruited only directors from general hospitals, one tertiary and three secondary, leaving out specialised healthcare centres, university, and military hospitals, as well as the primary healthcare sector. This could affect the transferability of the study results. Second, all the respondents were very interested in discussing the topic, most of them appeared strongly motivated and keen to talk about the projects in their hospital. It is noted that all hospital directors were already engaged to a

variable extent in climate smart HC projects. This introduces a self-selection bias in the study since the ones who had knowledge and experience with the topic were more likely to agree to participate. Therefore, it did not capture the perceptions of hospital directors not involved in such interventions. Third, there was an absence of quantitative data for cross-verification of the climate-smart HC project implementation and progress in each hospital. The only information on this topic came from the hospital directors' statements in the interviews. This leaves room for response bias in this area. Finally, we cannot exclude the researcher bias from this study since there was only one researcher responsible for the design, recruitment of participants, realisation of the interviews, collection, coding, and thematic analysis of the data. There was regular feedback from the educational supervisor, however, there was no review of the whole process by another researcher or qualified peer.

Ideally, large-scale mixed-methods research involving more countries of the Mediterranean region and including different types of healthcare facilities and relevant stakeholders would be advisable to obtain data to further improve design for more timely and actionable climate-smart healthcare policies. Also, the studies should include both kinds of stakeholders; the ones engaged in this type of practice and the ones not particularly involved in such programs.

One of the possible barriers in the recruitment of participants for the interviews from different countries could have been the language barrier. These interviews require a rather high level of language command and can be difficult or even discouraging for a person who does not speak the same language as the interviewer. Ideally, the interviews should be conducted in the native language of the informant. In our case, apart from Greek and English, the researcher should have also offered the possibility of carrying out the interview in Italian, Spanish and Portuguese.

There were also difficulties in recruiting informants from this specific group of stakeholders, the hospital directors. It transpired that these stakeholders are too busy to participate in qualitative research as informants in the in-depth interviews. One possible suggestion will be to invest more time in identifying, contacting, and engaging them, especially the ones not involved in climate-smart projects. This requires a purposive sampling strategy, with "lay of the land" research in advance to help identify the directors implementing sustainable HC and the ones who do not. Additional time and effort should be put into contacting these directors either via phone, email or in person, with reminders and follow-up initiatives to increase the possibilities of recruitment. In two of the cases in this study, the hospital organisation asked for extra paperwork to be completed according to their protocol for participation in research studies. Again, this called for more time to go through the process, which was a challenge given the limited timeframe for the completion of this thesis (4 months, alongside internship work).

Conclusion

Today, the need for environmentally sustainable healthcare delivery appears more urgent than ever. In the wake of the devastating COVID19 pandemic, healthcare systems prioritise recovery and building up their strength and resilience for the future (McKee et al., 2021). At the same time, the ongoing climate crisis, and the pressure to catch up with the SDGs, after a severe disruption during the pandemic, is orienting them toward climate-smart equitable healthcare practices. The main feature of these practices is environmental sustainability, essentially climate mitigation and resilience, which underpins every effort for strengthening, recovery, preparedness, and resilience of future health systems. In Europe, this effort is also part of a wider transition toward climate neutrality by 2050, following the policy framework of the European Green Deal (European Green Deal, n.d.).

This study contributes to the discussion around the timely implementation of sustainable practices in healthcare and puts forward three suggestions for the national health and climate policies. First, the development of comprehensive climate adaptation policies in the healthcare sector, second, the promotion of intersectoral cooperation and continuity of practice and third, the training of key stakeholders at the health and climate nexus. Hopefully, the increasing interest in this field will inspire larger and more detailed studies, both qualitative and quantitative, that could help inform the policies on the much-needed timely implementation of climate-smart healthcare.

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Appendix A

E-mail example sent to possible informants (in English)

RE: Invitation for the hospital director to participate in qualitative research on Climate-smart Healthcare in the Mediterranean – ITALY, SPAIN, PORTUGAL

Dear hospital director,

I am a respiratory physician and candidate Master of Public Health at EHESP, currently doing my internship at Health Care Without Harm Europe, in Brussels, to gain international experience in climate-smart healthcare policy.

My Master Thesis is a qualitative research study on the challenges and opportunities faced by hospital directors while implementing climate-smart healthcare. I will conduct online interviews (30-45 mins) on the topic, and I am looking for hospital directors from five Mediterranean European countries who want to participate on a voluntary basis. The interview guide will be provided in advance and the interview will be in English.

I will be honoured if you would like to participate in my research.

Yours sincerely,

Marina Antoniou

Dr Marina Antoniou, Respiratory Physician, MBBS, MPH(c)
Climate Policy and Projects Assistant at Health Care Without Harm Europe

Appendix B

Interview Guide

Introduction

Thank you for accepting my invitation to discuss this topic today. I want to clarify with you that there are no right or wrong answers. I am looking for your personal opinion which is extremely important for my research.

Background/ sociodemographic:

- Can you tell me a few things about yourself, your education, and your professional background?
- Also, I would like to know about the hospital and your specific duties: a brief description of the main services it provides, bed capacity, and your responsibilities.

Main interview

IQ.1 To what extent does the topic of climate change come up in your daily practice?

IQ.2 What is your opinion about your country's policy in this area?

IQ.3 What do you think about sustainable healthcare?

IQ.4 What, if any, formal education have you had on the topic of sustainable healthcare?

IQ.5 What are your thoughts on implementing sustainable healthcare in your hospital?

- probe: What challenges/ obstacles might you expect?
- probe: What opportunities (if any) do you see?

IQ.6 What has been done, or is currently being done, in your hospital to mitigate GHG emissions?

IQ.7 What has been done, or is currently being done, in your hospital to build up healthcare resilience against climate change?

IQ.8 What kind of support (if any) do you need specifically?

- From whom?

IQ.9 What do you think needs to be done in the healthcare field to address climate change?

Closing the interview:

Thank you for all this information. It has been extremely helpful for my study.
Is there anything else you would like to say on the topic?

Appendix C

Codebook

Topical/ Interpretive	Code name	Subcode	Definition
Topical	CCHCKnowledge	CCHCImpact	Use this code to capture any knowledge the HDs have on the impact of climate change on their everyday practice.
		CCHealthPolicies	Use this code to capture any knowledge/ thoughts the HDs have on the current climate and health policies in their country.
	Climate-SmartHC	CSHCStudies	Use this code to identify any relevant studies they had on the field of climate-smart/ sustainable HC.
		CSHCProjects	Use this code to gather any information about their past or current sustainable HC projects.
		CSHCChallenges	Use this code to capture the information related to specific challenges they encounter during the implementation of sustainable HC in their hospitals.
		CSHCOpportunities	Use this code to collect any information about the possible opportunities they perceive in adopting CSHC practices.
		CSHCHelp	Use this code to capture their thoughts on the help they may need to carry out the sustainable HC projects.
		CSHCLeadership	Use this code to collect any information on their views about who should lead the effort against climate change in HC.
Interpretive	Professional Background		Use this code to explore how their academic and professional background (studies, previous jobs, training) affects their motivation to engage in CSHC.
	Country's policies		Use this code to investigate how their perception of their county's health and climate policies affect their will to commit to comprehensive climate-smart HC (includes absence of knowledge on country's policies).

Résumé

Contexte : Les directeurs d'hôpitaux constituent un groupe important de responsables des soins de santé, stratégiquement placés pour mettre en œuvre les politiques de santé publique relatives à la fourniture de soins de santé, telles que les soins de santé climato-intelligentes, qui sont en train d'émerger. Ce type de soins de santé combine à la fois des pratiques d'atténuation et d'adaptation, et sa mise en œuvre en temps opportun est de la plus haute importance pour la région méditerranéenne, qui subit un impact climatique important. La recherche qualitative, bien que rare dans ce domaine politique naissant, a permis d'obtenir un premier aperçu des défis et des opportunités dans ce domaine. Nous avons utilisé cet outil pour mettre en lumière les défis perçus par ces parties prenantes en première ligne de la mise en œuvre de la politique, en vue d'informer les politiques de soins de santé dans la région.

Méthodes : Cinq entretiens semi-structurés en profondeur avec des directeurs d'hôpitaux sur le thème de la mise en œuvre de soins de santé adapté aux changement climatique en Méditerranée ont été réalisés. La nature de la recherche était principalement descriptive et exploratoire, cherchant à étudier leur perception des défis et des opportunités liés aux soins de santé durable. Une analyse thématique des entretiens retranscrits a été réalisée et ces informations ont été examinées dans le contexte du paysage politique actuel de la santé et du climat dans les pays respectifs.

Résultats : Trois principaux défis dans la mise en œuvre des politiques de santé climato-intelligentes ont été identifiés. Premièrement, le manque de sensibilisation des directeurs d'hôpitaux et de la société en général à la contribution des soins de santé au changement climatique. Deuxièmement, l'absence de pratiques complètes d'atténuation du changement climatique et de résilience climatique dans les politiques de santé actuelles. Troisièmement, la faible coopération entre les différents secteurs aux niveaux local, régional et national, qui entraîne des retards importants dans la réalisation des projets de soins de santé durables.

Conclusions : Les politiques de santé dans le domaine des soins de santé durables doivent être éclairées par des recherches quantitatives et qualitatives. La présente étude qualitative, axée sur deux pays méditerranéens, a montré la nécessité de mettre en place des politiques plus complètes qui incluent à la fois des pratiques d'atténuation du climat et de résilience au climat. Elle a également souligné l'importance de sensibiliser les parties prenantes et de soutenir la coordination intersectorielle pour une mise en œuvre efficace et rapide de ces politiques. Il est fortement recommandé d'effectuer des recherches à grande échelle avec des méthodes mixtes, impliquant un plus grand nombre de pays et la majorité des parties prenantes concernées, et pas seulement les directeurs d'hôpitaux, afin d'obtenir des données plus approfondies qui pourraient aider à concevoir des politiques de soins de santé climato-intelligentes opportunes et applicables.