Talking to patients about the health impacts of climate change in primary care: a qualitative study among Belgian general practitioners

by

FERRARESE Alyssia

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Acknowledgements and Dedication

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This thesis is dedicated to my beloved grandmother, whose motto never left my thoughts while I was working on it... *“Tomorrow will be better.”*

Summary

Introduction

Climate change is a major public health threat whose adverse effects on people's health and well-being are already being felt worldwide, including in Europe. Given the impact of climate change on public health, healthcare professionals have a moral and ethical duty to protect people's health and well-being. As frontline care providers who have a trusting relationship with their patients, general practitioners (GPs) are particularly well-positioned to fulfil this responsibility and have an essential role to play in raising patients' awareness about the adverse effects of climate change on health and solutions to address them. However, recent studies suggest that communication about climate change and health during primary care consultations is still not a standard. As the situation is poorly explored among family physicians in Belgium, further investigation is necessary to better understand the circumstances influencing dialogues about the impacts of climate change on health during general practice consultations, and suggest possible actions that could support Belgian GPs in their daily practice.

Aim

This research aims to understand if and how the harmful effects of climate change on health are discussed with patients in medical consultations with family physicians in Wallonia and Brussels, as well as the characteristics of current exchanges on this matter.

Methods

From February to March 2025, fifteen semi-structured in-depth interviews were conducted in French, alongside other complementary qualitative data collection techniques, such as informal conversations and participant observations. This qualitative study aimed for maximum variation, and a purposive sampling strategy was used to identify participants including patients and GPs, attending different types of general practices and coming from Wallonia and the Brussels-capital region. Data collection and analysis were conducted concurrently following an iterative process and using thematic content analysis as well as inductive theorisation.

Results

The findings showed that although participants expressed interest in and concern about climate change, most of them perceived it with distance. Nevertheless, both family physicians and patients recognised climate change as a relevant public health issue and as a matter of prevention in which GPs have a role to play by raising awareness of the health impacts of climate change and solutions to

address them; by caring for people while adapting clinical practices; by acting as role models; and by collectively advocating for sustainable healthcare practices and the implementation of mitigation and adaptation measures.

However, most participants never experienced communication about the adverse health effects of climate change during primary care consultations. The main barriers identified were time constraints and family physicians' work overload, the GPs' lack of knowledge about the health consequences of climate change and the perceived lack of connection between climate change and health among patients and family doctors.

Informants also identified people's disinterest and lack of concern about climate change as important barriers, and illustrated it by psychological distance, eco-anxiety, and low socio-economic status. To overcome these barriers, participants identified a trusting GP-patient relationship and family doctors acting as role models as essential communication enablers, and described varied communication approaches that they believed to be effective for talking about climate change and health, such as using patient-centred communication (PCC), framing climate change as a health problem rather than an environmental issue, and talking about solutions (health co-benefits).

Conclusion

To facilitate communication about the health effects of climate change during primary care consultations, it is important not only to raise awareness that climate change can indeed affect people's health and that it is a topic that can be discussed with GPs, but also to reinforce the legitimacy that family physicians need to integrate this issue into their daily practice. This legitimacy will be strengthened not only by GPs' knowledge of climate change and health increasing through a more extensive training offer and the development of practical tools, but also by their health institutions, professional organisations and peers officially recognising their role in the face of climate change and its impacts on health.

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List of Abbreviations

AAA	The American Anthropological Association
AROP	At-Risk-Of-monetary Poverty
CHCs	Community Health Centres
CMG	The College of General Medicine
COPD	Chronic Obstructive Pulmonary Disease
FMM	The Federation of Community Health Centres
GDPR	General Data Protection Regulation
GLEM	Local Medical Evaluation Group
GPs	General Practitioners
IC	Informal Conversation
IDI	In-Depth Interview
NCDs	Non-Communicable Diseases
NIHDI	The National Institution for Health and Disability Insurance
PCC	Patient-Centred Communication
PD	Psychological Distance
PM	Particle Matter
PO	Participant Observation
SES	Socio Economic Status
SILC	Survey of Income and Living Conditions
SPF	Federal Public Services
SSMG	The Scientific Society of General Medicine
UAA	Used Agricultural Area
WHO	The World Health Organisation
WONCA	The World Organisation of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians

1. Introduction

Climate change and health

Climate change is unequivocally considered as the greatest multigenerational public health threat of the 21st century, "*undermining decades of progress in global health"* (1). According to the World Health Organisation (WHO), between 2030 and 2050, climate change is expected to cause approximately 250.000 additional deaths annually due to its various health impacts (1,2). However, the adverse effects of climate change on people's health are already evident and healthcare systems worldwide, including in Europe, are increasingly confronted with them.

While the 2003 summer heatwave resulted in 70.000 premature deaths across the old continent (3), including 1.154 in Belgium(4,5), over the coming century, Europe is expecting an average of 90.000 annual excess deaths because of heat-related illnesses (6), including heat exhaustion and heat stroke, cardiovascular events, kidney diseases, and the exacerbation of pre-existing respiratory conditions. Similarly, over the next century, approximately 400.000 premature deaths associated with air pollution are expected to happen annually in Europe (6). Indeed, with warmer temperatures and extreme weather events, air pollution, linked to higher concentration of particle matter (PM), tropospheric ozone, and pollen concentration, is leading to an increased premature mortality through the exacerbation of non-communicable diseases (NCDs), such as cardiovascular diseases, chronic obstructive pulmonary disease (COPD), lung cancer, asthma and allergic conditions (7–9). In addition, the 2021 European floods that resulted in 212 documented deaths, including 43 in Belgium (10,11), and the heavy floods that hit Spain in 2024 with at least 200 documented fatalities are evident examples of the increasing number of extreme weather events hitting Europe and leading to injuries and deaths, subsequent infectious diseases and mental health issues.

Among climate-sensitive infectious diseases, clinicians are facing food-borne diarrheal illnesses (e.g. salmonella, campylobacter, vibrio spp., …), water-borne conditions (e.g. typhoid, cryptosporidiosis, leptospirosis, campylobacter…) and vector-borne diseases, with, for instance, an increased incidence in Europe of the West Nile Virus, Lyme and tick-borne encephalitis, Leishmaniasis and arboviruses such as Dengue fever (8,9). Furthermore, droughts being increasingly common in eastern and southern Europe, 50% of which is affected by an increased water scarcity (mainly in the Iberian Peninsula), local populations face a certain level of food and water insecurity (9). In 2021, nearly 60 million of Europeans were facing moderate or severe food insecurity, 11.9 million of them due to a higher number of heatwaves days and drought months (9). Finally, more and more people report mental health problems such as stress, insomnia, post-traumatic stress disorder and depression

associated with climate change stressors, as well as eco-anxiety due to "*a chronic fear of a doomed environment"* (3,8).

While climate change has a considerable direct impact on people's health, as well as indirect socio-economic consequences, healthcare systems can also be affected through destruction of infrastructures or supply chain disruption caused by extreme weather events. As the demand for healthcare will likely increase with escalating climate change harms on health**,** pressure on already-strained hospitals and health systems will compromise the health professionals' ability to deliver care in times of crisis (1,12,13). It is also well-known that vulnerable countries who contributed the least to global emissions are the hardest impacted (2,3,9,13,14). Similarly, within society, vulnerable populations, such as the elderly, (pregnant) women, infants and children, people living with chronic conditions, deprived, marginalized and urban population, and people working outdoors, are disproportionately harmed by the adverse health effects of climate change, deepening poverty and health inequities (1–3,8,9,12,13,15–21). Considering the Europe's trend for increased urbanisation and its ageing population with a higher level of chronic conditions (15), current and future European generations are vulnerable and exposed to potential severe health consequences.

For this thesis, the use of the phrase *"the impact of climate change on health"* (and its synonyms) will refer to the adverse effects induced by climate change on health and its impacts on healthcare systems, both previously described.

General practitioners' duty of care in the face of climate change

"As health professionals, we pledge […] to serve humanity by preventing needless suffering, and to foster conditions that give every person a fair chance at the blessing of good health" (22). As climate change harms people's health, worsens health inequities and is considered as a major public health threat, health professionals thus have an ethical and moral obligation to preserve patients and future generations' health and well-being, providing them with relevant information about the impacts of climate change on health (16,17,21,23–26). Among health professionals, general practitioners (GPs) are well-positioned and can play an essential role in raising patients' awareness about climate change and health.

Family doctors provide frontline care and in Europe, they usually are the first contact that people have with the health system (13,21,27–31). GPs also have a proximity to communities and patients (21,32,33), and are known to more easily reach the most vulnerable groups of the society (15). In addition, thanks to the long-term contact that exists between family physicians and patients, a trusting relationship is built between them over time (28,34). As illustrated in previous research, GPs

are also considered among the most trusted members of a community (3,12,16,33–35) and, thus, are seen as highly trusted and respected source of information, including on environmental issues, where they have the potential to counter misinformation (3,15,16,18,19,21,23–27,29,30,33,36). Family doctors may also have skills that could help them to address climate change and health with their patients. On the one hand, GPs are trained communicators who are experienced in addressing sensitive health recommendations (16,26,34,35). On the other hand, they are used to provide lifestyle counselling and motivate patients to adopt healthier behaviours (21,23,34). Finally, family physicians are seen as powerful voices who have the authority to speak about public health threats and to advocate for relevant interventions and changes at policy level (18,21,25).

For all these reasons, the World Organisation of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA) released, in 2019, a declaration urging GPs around the world to act on planetary health, and outlining the roles they must play in the face of environmental degradation and climate change (30). These roles have subsequently been highlighted in many medical journals (2,3,12,17,19,21,25,32,34,36). On the one hand, while GPs can prepare for and respond to the adverse health effects of climate change, they can most importantly act by raising awareness among patients and communities not only about the health impacts of climate change but also about potential solutions to address them, so that people can protect their own health and the environment (health co-benefits). On the other hand, while family physicians can make a difference by advocating for sustainable healthcare practices and for the implementation of appropriate mitigation and adaptation measures, they can also act as role models through the decarbonisation of their own practice and personal lives.

Nevertheless, the operationalisation of these actions is substantially impacted by the conditions of the health system in which medical professionals carry out their practice. In Belgium in particular, some existing challenges may limit the extent to which these expectations can be fulfilled. The Belgian health system is organised over three level of care. While the second and third line are dedicated to specialised care provided by specialist doctors, primary healthcare provides the population with health promotion, preventive and curative care services through the intervention of various social and health professionals, including GPs (39). Family physicians provide services through solo or group practices (39–41). While in solo practices family physicians work alone and are fully autonomous, group practices exist in different forms, such as monodisciplinary[1] or multidisciplinary

[1] GPs work either within a network, supporting each other while maintaining their autonomy, or within the same facility, sharing patients' medical records.

group practices[2], and community health centres (CHCs). CHCs are integrated health centres, sharing a patient-centred vision of health and made of multidisciplinary teams who provide patients with comprehensive care. CHCs are organised by district, into which they are integrated, and purposively target poorer municipalities (41–43). Thanks to this territorial approach, CHCs acquire over time a better understanding of their populations' needs, progressively create partnerships with the local associative network and thus, offer better adapted health care and actions to their patients, such as prevention and health promotion activities, targeting the various determinants of health (41–43).

In Belgium, GPs are easily accessible first-line care providers and are usually considered as entry points to the health system (39). However, the health system faces a chronic shortage of family physicians. Because of a national quota system[3], the overall number of graduating doctors remains insufficient compared to the population needs, and too few of them become GP (39,44). Meanwhile, ageing family doctors are gradually retiring despite an insufficient succession of younger GPs and a growing demand for care (39,41,44,45). While the sub-quota for family medicine is underestimated, this specialisation also suffers from the denigration of the profession, difficult working conditions and professional isolation, particularly in resource-scarce areas (44). In addition, family doctors are free to choose where to practice leading to an unbalanced and uneven distribution of GPs across the country and further exacerbating the shortage in areas experiencing difficult working conditions and professional isolation (39,44,45). Although some rural provinces, such as Luxembourg or Hainaut, have a lower density of family doctors, the Brussels-capital region also experiences a shortage, with a third of the population remaining without a family physician (44,45).

Recent studies conducted in Germany and United States suggest that discussions about climate change and health are not yet a standard practice during primary care consultations (15,20,24,26,27,29,33). In Belgium, specifically, this situation remains poorly explored among family physicians.

Given the relevance of the impact of climate change on public health, as well as the essential role that GPs could play in safeguarding people's health and in responding to climate change, it is crucial to get a better understanding of the characteristics influencing the dialogue about the impacts of climate change on health that may occur during general practice consultations. This study aims to provide an overall idea of the extent to which Belgian family doctors are interested in the effects of

[2] Various social-health professionals work together within the same facility and coordinate themselves around patient care.

[3] Since 1997, the Belgian federal government has introduced a national quota system that limits the quantity of NIHDI numbers (allowing care reimbursement) granted, thereby limiting the number of graduating doctors.

climate change on health, feel competent in playing a role in responding to it, and have introduced this topic in their regular practice. In addition, as GPs promote patient-centred care, it is essential to explore patients' views and perspectives about the health impacts of climate change and the possibility to communicate about it within primary healthcare. The insights that will be obtained through this study will create an opportunity to reflect on possible actions that could support GPs in their daily practice.

2. Objectives

2.1. Overall aim

The overall aim of this thesis is to understand if and how the harmful effects of climate change on health are discussed with patients in medical consultations with GPs in Wallonia and Brussels, as well as the characteristics of current exchanges on this matter.

2.2. Specific objectives

The specific objectives of this thesis are:

1. To explore the perception, personal interest, and concerns regarding climate change of GPs and patients in Brussels and Wallonia.
2. To develop a better understanding of the GPs' perceptions and views of the role they could play to tackle climate change and its health consequences.
3. To explore patients' perception and opinion on the role that GPs could play regarding the adverse effects of climate change on health.
4. To understand barriers and challenges that prevent GPs from communicating about the health effects of climate change with their patients, as well as potential facilitators and communication strategies.

3. Methods

3.1. Study design

To achieve the objectives abovementioned, a qualitative study was conducted. Different ethnographic methods were used, such as semi-structured in-depth-interviews (IDI), informal conversations (IC) and participant observations (PO). Data was collected among patients and GPs coming from Hainaut and the Brussels-Capital region, and attending different types of general practices.

3.2. Study setting and population

This study aimed for maximum variation in the study settings under three criteria: a) urban and (semi-)rural contexts, b) different types of practices, and c) GPs and patients' perspectives.

a. Different regions

Although the organisation of the healthcare system is the same in Brussels and in Wallonia, the realities faced by GPs in these two regions are different and worth taking into consideration in this research.

The Brussels-Capital region is an urban area where almost one third of its population lives below the poverty threshold[4] and experiences precarious conditions with a greater need for care than more advantaged people (47). Indeed, according to the 2024 survey on income and living conditions (SILC) (46), the at-risk-of-monetary poverty rate[5] (AROP) remains higher in the Brussels-Capital Region (26.5%) than in Flanders (7,7%) and Wallonia (13,5%). In addition, while the wealthiest sector of the population lives in the south-east of the capital, people with the lowest incomes tend to settle in the so-called *"poor crescent",* which includes Saint-Josse, parts of Schaerbeek and Anderlecht. The *"poor crescent"* refers to resource-scarce areas experiencing accumulation of social and health problems in the same neighbourhoods (48). For this study, data was collected both in affluent and resource constrained settings to account for variation in socio-economic conditions.

In Wallonia, the study was conducted in the province of Hainaut, not only because it has a high AROP rate (15.3%)[6](46), but also because it is composed of (semi-) rural and urban areas relying on climate-sensitive livelihoods such as agriculture. Indeed, Hainaut is known to be the leading Belgian province

[4] In 2024, the poverty threshold was 1520€/month for a single person and 3191€/month for a household with two adults and two children (46).
[5] AROP: the at-risk-poverty rate is the proportion of population having a disposable income below the poverty threshold.
[6] In 2024, the AROP rate in Namur was 11.8%, in Luxembourg 12.2% and in Liège 13.8% (46).

in terms of used agricultural area (UAA) as well as the leading Walloon province in terms of farms (49).

b. Different types of general medicine practices

Considering that specific working conditions encountered in diverse types of practices may influence whether or not GPs communicate with their patients about climate change and health, two types of practices were included in this study: solo practices and community health centers (CHCs) (39–41), in which GPs experience different working conditions and work load. In solo practices, family physicians tend to have a higher workload (41), dealing with consultations (an average of 10-20 minutes per patient and 20-40 patients per day) and administrative burdens that they cannot easily delegate. In CHCs, GPs have more stable working hours with slightly longer and more flexible consultation times (an average of 15-20 minutes per patient and 15-20 patients per day) (41,43). In addition, they do not have the same administrative burden as solo practitioners, since responsibilities are shared among the various members of the multidisciplinary team. Because health promotion is a key component of CHCs, patients also benefit from activities promoting healthy nutrition (e.g. cooking workshops), physical activity (e.g. cycling, nature walks, etc.) and social interaction. These activities are based on the population needs and developed by the members of the team who wish to participate or are dedicated to this component (41–43). Finally, by purposively targeting poorer municipalities, CHCs intend to reach the most vulnerable groups of society (41–43).

c. Different populations

Because GPs promote patient-centred care, it is essential to explore patients' views and perspectives about the impacts of climate change on health and the possibility to communicate about it within primary healthcare. In fact, patients are the experts in their own health, and not involving them in this study would risk making recommendations that are not in line with their expectations and needs.

Family medicine practices serve relatively diverse populations from a socio-economic and cultural perspective. Populations vary depending on the socio-demographic characteristics of the locations in which the practices are established. As CHCs tend to set up primarily in socio-economically disadvantaged neighbourhoods and as they develop partnerships with the local associative network (migrant reception centres such as Fedasil, Caritas, associations supporting homeless people, victims of domestic violence, etc.), they tend to particularly support populations living under precarity (41–43). Nevertheless, CHCs remain open to anyone living in the area they cover, so the patient population remains quite diverse (43).

d. Sampling strategy and recruitment

A purposive sampling strategy was used to identify participants. Informants were selected from the professional networks of GPs in Brussels and in Hainaut.

To recruit family physicians, an explanatory email (annex 1) was sent to these professional networks, through the coordinators of various groups of practitioners, such as general medicine circles[7], local medical evaluation groups (*GLEM*[8]), the Scientific Society of General Medicine (SSMG[9]), the Federation of Community Health Centres (FMM) and various CHCs etc., so that they could forward it to their respective members. To recruit patients, GPs were asked to directly share the information with their patients, and relatives were asked to do the same with anyone they knew who had a GP. Contact information was included in this email, so that interested individuals could voluntarily participate by reaching out directly to the researcher.

Participants were recruited based on the following inclusion and exclusion criteria.

Inclusion criteria:

- Adults aged over 18 consenting to participate to this study.
- GPs working in a solo practice or in CHCs.
- Patients consulting in general medicine in the abovementioned types of practices.
- French or English speakers

Exclusion criteria:

- People not providing a consent.
- Patients previously or currently followed in the researcher's personal practice.
- Patients with cognitive disorders or mental disabilities.
- Potential participants who cannot communicate in French nor English.

Although patients consulting in solo practices in both Brussels and Hainaut were included in the study, no solo family physicians responded to the recruitment email, despite numerous reminders. For this reason, and to maintain comparability between different types of practices, GPs working in mono- and multidisciplinary groups were also included in the study.

[7] A *general medicine circle* is a local group of GPs, responsible for organising the general medicine on-call system in the region covered by each respective circle.
[8] A *Glem* is a monodisciplinary group of peers (in this case GPs) who share and critically evaluate their medical practice, to promote the quality of care.
[9] The SSMG aims to improve the quality of care provided in general medicine and offers quality continuing medical education as well as validated medical scientific information.

In total, fifteen IDIs were conducted with GPs and patients in Brussels and Hainaut (Wallonia), respectively working and consulting in various types of practices. Participants' socio-demographic characteristics are described in Table 1.

Table 1: Participants' socio-demographic characteristics (N=15)

		Total n *(%)*		
		Patients	**GPs**	**N**
Age	25-34	0 *(0)*	5 *(63)*	5 *(33)*
	35-44	0 *(0)*	2 *(25)*	2 *(13)*
	45-54	5 *(71)*	0 *(0)*	5 *(33)*
	55-64	0 *(0)*	1 *(12)*	1 *(7)*
	> 65	2 *(29)*	0 *(0)*	2 *(13)*
Gender	Female	3 *(43)*	8 *(100)*	11 *(73)*
	Male	4 *(57)*	0 *(0)*	4 *(27)*
Region	**Brussels-Capital**	4 *(57)*	4 *(50)*	8 *(53)*
	Brussels city	1	1	
	Schaerbeek	2	0	
	St Josse	1	0	
	Anderlecht	0	1	
	Auderghem	0	1	
	Etterbeek	0	1	
	Hainaut (Wallonia)	3 *(43)*	4 *(50)*	7 *(47)*
	La Louvière	1	0	
	Lobbes	1	0	
	Mons	1	0	
	Boussu	0	1	
	Charleroi	0	1	
	Châtelet	0	1	
	Quiévrain	0	1	
Type of practice	CHC	2 *(29)*	3 *(38)*	5 *(33)*
	Pluridisciplinary group	0 *(0)*	4 *(50)*	4 *(27)*
	Monodisciplinary group	2 *(29)*	1 *(12)*	3 *(20)*
	Solo	3 *(43)*	0 *(0)*	3 *(20)*

3.3. Data collection

Complementary qualitative data collection techniques were used to ensure triangulation:

Semi-structured in-depth interviews

An interview guide (annex 4) was developed based on the initial research objectives and was progressively adapted according to preliminary findings. Topics covered for both GPs and patients during IDI's included their personal interest, concerns and perceptions about climate change and its

impacts on health; their opinions and definition of the role that GPs could play in the face of climate change; their experiences with, and perceptions of discussing the health effects of climate change during medical consultations; their views on appropriate communication strategies to do so; the barriers and challenges preventing GPs and patients from communicating about climate change and health during consultations; the potential facilitators supporting them in climate change communication, and the resources needed to integrate it during primary care consultations.

Interviews took place in general medicine practices, at home or in cafés according to participants' preferences. IDIs were conducted in French and lasted approximately one hour. Most interviews were conducted in-person, at a time and place convenient to the respondents. Only one online interview was organised, using an institutional MS Teams account, complying with General Data Protection Regulation (GDPR) and e-health consultation guidelines. With the consent of all participants, interviews were recorded and notes taken when necessary. The content of the IDIs was summarised as soon as possible after interviewing. Since sensitive and potentially identifiable information was collected during the interview process, data were pseudonymised soon after collection during summarisation.

Informal conversations

Information was collected through spontaneous informal conversations that took place in different professional settings, such as with SSMG colleagues or other GPs during in-person trainings. Notes of ICs were written up and pseudonymised immediately after the conversations to minimise loss of insights. This method provided information that allowed to triangulate data from the interviews.

Participant observations

Participant observations were conducted as a respondent-independent method and provided additional perspectives. Observations took place in practices where medical encounters between participants occur (outside consultation), in community activities (e.g. Climate Fresco), and in different professional settings, such as in-person medical trainings, the FMM's ecological emergency working group, etc. The researcher participated in these observations from her position as either a member or a trainee. The settings were chosen according to the emerging results, but also based on emerging opportunities. No pictures or videos were taken, but the settings were described as fully as possible by taking notes (physical space, people's behaviour, roles and reactions of different actors, interaction between people, atmosphere, and self-reflection).

3.4. Data Analysis

Data collection and analysis were conducted concurrently to follow an iterative process in which emerging information shaped the ongoing data collection. Data analysis continued after data collection, using thematic content analysis to categorise recurrent themes in IDI, IC, and PO summaries (comparative process), and inductive theorisation (based on the data progressively collected).

NVivo software (version 15, ©Lumivero) was used for data management, coding and generating categories. Recurring categories were then organised into dominant themes, grouped by specific objectives. Data were processed in the original data collection language and translated at stages of category building and reporting.

3.5. Ethics

This study was approved by the Institutional Review Board of ITM on the 31st of January 2025 (ref No 1836/24). The research was conducted according to the principles stated in the Declaration of Helsinki, the EU GDPR 679/2016, all applicable regulations and according to the established international scientific standards.

During fieldwork, the Code of Ethics of the American Anthropological Association (AAA) was followed. Prior to the interviews, potential participants received the study information sheet (annex 2) and consent forms (annex 3), written in French and providing information about the topic and the aim of the research, the right to refuse to be interviewed, the potential risks and benefits of participation, as well as the right to withdraw from the interview at any time. The consent form was then orally explained to the respondents and written individual informed consent was collected before starting in-person and online interviews.

All collected data were treated with strict confidentiality and in accordance with GDPR regulations on data protection. Data confidentiality was ensured by pseudonymising, as much as possible, all data collected through IDIs, ICs and POs, so that no names and other identifiable information appeared in summaries, file names, and log files. In addition, to minimise the risk that respondents provide some identifiable information, writing and recording identifiable data was avoided and participants were encouraged to avoid personal references as much as possible.

3.6. Use of artificial intelligence tools

Whenever necessary, DeepL was used to improve the text, primarily to find synonyms. Having a reasonable level of English, I remained critical of the artificial intelligence's suggestions and often checked them in a paper dictionary.

3.7. Positionality

I have been a GP for 13 years, working mainly in low socio-economic districts of various Brussels municipalities. Moreover, I have always worked in community health centres (CHCs), as the philosophy and values defended by CHCs correspond to the vision that I have of what primary health care should be.

Perceiving climate change as an overwhelming threat, I experienced a period of eco-anxiety during which it was difficult for me to hear and talk about climate and environmental issues. However, as I learned more about the topic and the solutions available to protect both health and the environment, I gradually felt more comfortable talking about it and integrating it into medical consultations. Although they often seemed surprised, patients were always open and interested in receiving advice on how to maintain their health and reduce their own environmental impact. This experience has contributed to my personal conviction that it is important for GPs to address climate change, both in their medical practice and on an individual level. I acknowledge that my experience and stance on this topic may have influenced the research and the way the data were collected, analysed, and interpreted. To maintain objectivity and limit bias, I discussed the results regularly with my coach and a few colleagues throughout the data collection process, as well as during the analysis and writing stages.

I recognise that my insider position had advantages and disadvantages during this study. On the one hand, being an insider allowed me to benefit from a more nuanced understanding of what I saw and heard during the fieldwork. In Brussels, it also gave me easier access to respondents and opportunities for POs, thanks to my professional network. However, this was different in Hainaut where I had more difficulties accessing participants (both GPs and patients). In addition, I believe I benefited from greater openness on the part of the informants, especially with GPs, with whom I was able to maintain a collegial approach. On the other hand, despite trying to remain vigilant, I acknowledge that my insider position may have prevented me from seeking more information on certain issues.

Because I had never worked in a practice other than CHCs, I quickly realised that I also had preconceived notions about monodisciplinary and multidisciplinary group practices, regardless of their location. Being aware of this, I tried to delve deeper into some aspects to get a better understanding of the realities they actually live.

4. Results

In this chapter, the study results are reported in four sections corresponding to the specific objectives:

1. Patients and GPs' perception, interest, and concerns about climate change.
2. Patients and GPs' perception on family physicians' role in the face of climate change.
3. Understanding barriers and challenges.
4. Discussion enablers and communication strategies.

In the findings described below, the term "participant" and its synonyms refer to both patients and GPs. Comparisons are reported where there are important differences between them, but also between regions and between different types of practices. Quotations are used to illustrate findings where appropriate.

4.1. *"In everyday experience, it's ok":* perception, interest, and concerns about climate change

Participants agreed that climate change is an important and relevant issue that should no longer be avoided in everyday conversations. Given their interest in the topic, the majority of informants reported feeling comfortable discussing it with people around them, although most considered themselves to have a low to moderate level of information.

Participants unanimously expressed concern about climate change and shared a range of negative emotions, from fear and anxiety to anger and sadness. Some respondents emphasised that these negative feelings derived from pessimistic messages conveyed by the media. According to them, instead of providing useful information, such as stressing the link between climate change and health, the media often convey stressful and fear-inducing messages, as well as misinformation that fuels scepticism.

> *"They demonise* [climate change] *[…] And so, it brings something that... well... that is stressful […] Anyway, it brings a lot of negative things." (GP_Wallonia)*

In addition, other participants, mainly patients, emphasised their concern about the younger generations who are already paying the bill and who will face more severe consequences in the future.

"I find that at the moment, we are... with everything that is happening in the world, we are ..., we are regressing on all these essential things because… What do we reserve for our descendants if we neglect this problem?" (Patient_Wallonia)

When asked if they or someone they know ever experienced climate change-related events, respondents mainly discussed climate change manifestations that affected relatives and friends in southern Europe and found it more difficult to give examples of what is happening in Belgium. The most frequently mentioned climate change-related events experienced in Belgium were seasonal and weather disruptions, floods, heatwaves, and outdoor air pollution.

" […] In 1970, when I came here [in Belgium]*, there was 30 to 40 cm of snow outside, you couldn't walk. And now since, I would say, the 90s, there is no longer this, so much snow [...] Before, there was winter, there was spring, there was summer, but now you can't tell where winter and where summer are!" (Patient_Wallonia)*

Although participants expressed interest and concern about climate change and acknowledged that it is *"happening now and here"* in Europe, most of them perceived it with a certain geographical and temporal distance, as they felt that Belgium was spared for the time being.

"It remains things that are far away. […] For example, in Brussels, I feel pretty safe from that. So, there's a kind of double sensation... At the same time, "wow", there are still terrifying things happening, and at the same time, in everyday experience, it's ok." (Patient_Brussels)

When asked how climate change might affect people's health, respondents, mainly GPs, mentioned health problems related to environmental issues, such as endocrine disrupters and other pollutants, that are currently in the media spotlight. Given the common perception that Belgium has so far been spared from climate change, most informants expressed difficulty in describing its potential adverse health effects, and none of them self-identified as being at risk of experiencing them.

"For now, I have the impression that we are not too threatened here [in Belgium]. *So, I don't feel like I am particularly at risk." (Patient_Brussels)*

Participants finally demonstrated varied but limited knowledge about climate change and health. The most discussed health impacts of climate change were its effects on mental health, respiratory and allergic diseases, and increases in infectious diseases, mainly vector-borne diseases. Only one GP explicitly mentioned the impacts of climate change on the country's health system.

"We're also going to have less access to care because there are more new, different pathologies for which we're going to have to find solutions. […] I'm leaving the boat, eh, if ever at that stage (laughs)." (GP_Wallonia)

The elderly and people with lower socio-economic status (SES) were the two main groups identified by participants as most vulnerable to the health impacts of climate change, followed to a lesser extent by people with chronic diseases and young children. People with lower SES, primarily cited by GPs, were recognised as more vulnerable due to living in unsafe and unstable housing, often in high-risk areas, and due to a lack of coping resources as well as an already fragile health.

"Well, clearly, poor populations because they have fewer alternatives. They can move less because the place where they live is no longer appropriate, because they just don't have the financial means. And because they are people who already have more fragile health, because of other determinants […] their health is already more fragile because of other, other reasons." (GP_Brussels)

4.2. *"A matter of prevention"*: perceptions on GPs' role in the face of climate change.

GPs and patients unanimously acknowledged climate change as a public health issue that harms people's health and well-being and believed that family physicians have a role to play in preserving the health of their patients. Informants emphasised the relevance of discussing the health effects of climate change during the medical encounter, as they all perceived it as a matter of prevention. Thus, they believed that GPs should raise awareness among patients not only about the adverse effects of climate change on health but also about solutions to address them, so that people can protect their own health and well-being.

"[Climate change] *has direct impacts on our patients' health, and so…actually, it is part of health just like taking blood pressure, or…just like uh giving sleep hygiene advices […] For me, it's part of prevention in the broad sense". (GP_Brussels)*

In addition, participants agreed that family physicians are uniquely positioned to address climate change and health with their patients. While some respondents mentioned that GPs are front-line care providers, generally considered the entry point into the healthcare system, many emphasised that regular and long-term contact allows family physicians to get to know their patients better and build a trusting relationship over time.

« I believe that when you have a general practitioner, and that you keep seeing him, and that you consider him as your general practitioner, it is because you trust him. And if you trust him, I think it

is true that it is an important source of information regarding the effect of global warming on health." (Patient_Wallonia)

Although informants believed that family physicians have a role to play in addressing climate change and its health consequences, some stressed the importance of ensuring that this responsibility does not fall solely on them. GPs particularly emphasised the importance of involving specialists, to ensure consistent messages across the first and second lines of care, especially when patients are referred to them with health problems that may be exacerbated by climate change, such as cardiovascular and respiratory diseases (asthma and allergic conditions).

When participants were asked how they would define the role that family physicians should play in the face of climate change, GPs and patients primarily discussed prevention and health promotion. According to them, family physicians could act by raising awareness not only about the health impacts of climate change and the risks that patients personally face, but also about actions that people can take to safeguard their own health and the environment. To do so, a few respondents emphasised the importance for family doctors to identify patients that are the most vulnerable to climate change (e.g. people with chronic conditions, the elderly, people with low SES….) to give them more attention. Two informants added that discussing the adverse health effects of climate change with GPs could encourage patients to spread the information around them, and other informants pointed out that family physicians have the potential to counter misinformation because their patients trust them.

"For example, a very simple thing, and this is what I know GPs do in Italy during the summer. They raise awareness among the elderly not to go out during the very hot hours, to drink a lot […] On that, yes, certainly that is a fundamental role, I would say, of family physicians, to raise awareness especially among vulnerable people." (Patient_Brussels)

Most participants, mainly GPs, also emphasised that family physicians should lead by example in adopting themselves climate-friendly behaviours by decarbonising their own practices and personal lives, to be consistent with the messages they convey to their patients and colleagues.

"But if we..., if we travel by bike to make home visits, or on foot, […] I think that it actually allows us to have... to show that even if, "ok" we talk about it, but there is also an action that is carried out personally by the doctor rather than...rather than driving a big Range Rover and then talking about climate change. I think they won't understand the link." (GP_Wallonia)

One patient explained that GPs should also share their own experiences to demonstrate that action is realistic and achievable.

Respondents, mostly GPs, also discussed the curative role of family physicians and the importance of adapting their clinical practices, to reduce their carbon footprint. A few GPs mentioned the need to promote the right care among family doctors. This involves encouraging them to avoid overprescribing unnecessary drugs and tests and to gradually deprescribe[10], for example using practical tools such as the STOPP/START protocol[11] for the elderly or the medication review[12] that can be done in collaboration with pharmacists.

> *"And then we know, because healthcare is a major polluter, well there is also the whole question, I think, of deprescribing both medications and complementary tests." (GP_Brussels)*

Given that climate change is already harming health and is expected to worsen, several informants stressed that family physicians should inform communities and national leaders about the risks they face, and advocate for sustainable health practices as well as for the implementation of appropriate mitigation and adaptation measures. A few respondents emphasised that GPs should act collectively, through their professional organisations, to have a greater impact. Most acknowledged that family physicians are well-positioned to fulfil this role, as they are respected and trusted members of the society, and are seen as audible voices who have the authority to speak about health, a value to which everyone can relate.

> *"Indeed, I believe that it is, it is also essential since... It is getting worse [...] And therefore, I find that it really worth it that GPs act on, influence leaders on this problem. [...] I believe that if all GPs get involved [...] it would be very important […] I believe that we would need a sort of, a union. [...] It always gives more weight when there is a relatively large group that acts and that... sounds the alarm to our leaders [...].” (Patient_Wallonia)*

[10] Deprescribing means stopping or reducing the dose of a medication when it no longer has a beneficial effect or may be harmful. In this way, deprescribing can not only improve patients' health, but also reduce drug waste and their environmental footprint.
[11] The use of the STOPP/START criteria allows the assessment and detection of potentially inappropriate medication prescribing in people aged 65 and over.
[12] From April 2023, any polymedicated patient can use this service with their pharmacist to review their current treatment, and for GPs to adjust the patient's medication plan based on the pharmacist’s recommendations.

If family physicians were to assume this role, many GPs believe that this could have a positive impact on patients' health and well-being, as well as on the therapeutic relationship, which they felt would be further strengthened.

4.3. Understanding barriers and challenges

When asked to identify challenges that prevent GPs from communicating with their patients about the health effects of climate change, three main themes emerged from the interviews: GPs not being seen as a source of information, time constraints, and a perceived disinterest and lack of concern of the interlocutor.

4.3.1. Climate change and health: GPs *"don't wear that hat"*

When asked where people would get further information about the harmful effects of climate change on health, respondents mentioned several sources of information, such as social media, newspapers, TV news and other TV programs, but none of them cited GPs as potential resources. Participants described several reasons why family physicians are not perceived as, and do not see themselves as a source of information on climate change and health. Most GPs admitted that they had insufficient knowledge about the health impacts of climate change, and therefore they did not feel comfortable nor legitimate in addressing the issue with their patients. Several family physicians attributed this knowledge gap to the lack of continuing medical education on the topic and its absence from the medical curriculum. In addition, a few GPs noted that the lack of clear and adapted guidelines is likely to exacerbate this discomfort in talking about the adverse effects of climate change on health with patients.

> *"Well, in any case, I wouldn't feel at all a resource for patients because I have the impression that there are a lot of things that I don't know." (GP_Brussels)*

Most GPs also believed that patients, and to a lesser extent family physicians, do not make the connection between climate change and health, and therefore do not think to raise the issue in primary care consultations. Moreover, most patients interviewed admitted that they did not make this connection themselves.

> *"I think that...maybe we don't make enough of a connection between health and... climate change. I think that's it, and that's why we don't talk about it." (Patient_Wallonia)*

While few participants noted that the media contributes to people's lack of awareness by not addressing the link between climate change and health, others felt that GPs might not be used as a source of information due to the public's increased access to information through other sources.

In addition, some respondents argued that family physicians are simply not publicly recognised as having a role in addressing climate change and health with their patients. A few GPs shared that they even felt unsupported by their institutions and professional organisations, which they believed had not taken a clear position yet on the role they should play.

"There is this need to…well, that we are also told that this is our place, that it is, that it is encouraged, requested […] [by] *well our professional associations, our univ'…uh … the NIHDI, the Minister of Health […] well, a support." (GP_Wallonia)*

4.3.2. Time constraints

Participants identified time constraints as one of the main barriers to communicating with patients about the health impacts of climate change. Although time constraints were cited by respondents involved in different types of practices, in Brussels and in Hainaut, this barrier was less mentioned by those working or consulting in CHCs. Due to a chronic shortage of family doctors, particularly mentioned by Walloon informants, but also to the increasing number of chronic diseases and prevention issues that need to be addressed during consultations, many respondents acknowledged that family physicians are so overworked that the consultation time is too short to integrate communication on climate change and health into their duties. This finding was particularly strong among Hainaut practitioners and patients.

"Will she have time to explain to you? As I explained, they are overloaded! Are you going to bother a doctor [...] to talk about climate issues when there are other patients and sick people there?" (Patient_Wallonia)

"So now it's a matter of time. They're solo [GPs]*, at least in my region, in a [...] shortage area, […] They don't have the time, honestly. They don't have the time." (GP_Wallonia)*

In fact, some informants, mainly GPs working in practices other than CHCs, specifically cited time constraints as a barrier to prevention and health promotion, believing that family doctors have no choice but to prioritise curative care because they do not have time during consultations to discuss issues other than the health problems that bring patients to the GP's office.

“I think the consultations are still quite short. So, we focus on what the problem is, uh... the problem to be solved, to be seen, to be consulted.” (Patient_Brussels)

“And the place of prevention, […] well clearly when we have less time to discuss, we go straight to what seems most relevant to us.” (GP_Wallonia)

In addition, participants, especially GPs, believed that patients do not even expect their family physicians to discuss prevention during consultations, and felt that they most often come to their GP for specific health problems, that are not related to climate change, and for which they expect their family doctor to provide a solution and not to talk about other things.

"In the habit I have acquired of consulting a doctor, I come to a doctor because I have a health problem and he is going to treat me for that. [...] When we go to a doctor, it is to be treated […] And so, in fact, the doctor has more of a role... ultimately it is a bit of a caricature, but almost of a technician who is going to repair rather than an educator." (Patient_Brussels)

"But, clearly, it's not...it's not expected. People don't expect us to talk about anything other than the complaint that brought them here." (GP_Brussels)

Considering climate change and health as a preventive matter, informants described other barriers that prevent GPs from communicating about it with their patients. A few family physicians highlighted that, unlike CHCs, which offer health promotion activities to their patients, other types of GP practices find it difficult to integrate health promotion into consultations and do not have the resources to develop it out of medical encounters. Some participants also felt that not all family physicians have sufficient communication skills to address prevention and health promotion because they were not trained in this during medical school and had to learn it through experience.

“We're trained to be moralisers. "I know, I'm telling you..." That's it. And then everyone develops its own temperament differently. But basically, we're just people who point out the problems and say "That's not good. You have to do this." And we were told "compassionate communication, whatever, motivational interviewing..." but we had to learn it, but we didn't learn to be a coach, for example.” (GP_Wallonia)

4.3.3. “Burying our heads in the sand”: disinterest and lack of concern

Respondents unanimously agreed that it is more difficult to talk about climate change and health with people whom they perceive as disinterested and unconcerned. While most participants believed that the distance with which some people perceive climate change could explain their lack of

concern about its health impacts, many also cited denial and scepticism as a cause of disinterest as well as a barrier to communication mainly identified by GPs who fear of getting involved in a controversial debate during consultations.

"[…] and they'll tell you, "Well, it doesn't concern me." [...] So that's it, it doesn't directly affect them right now, in a sufficiently significant and visible way. So, it's not their problem. [...] Because it's true that when we talk about problems, climate problems, well, we see the biggest catastrophes. Well, the biggest catastrophes, in the end, aren't here. The biggest catastrophes aren't happening here." (GP_Wallonia)

In addition, although some informants felt that negative emotions about climate change may potentially motivate people to talk about it and to act, the majority, mainly GPs, believed that anxiety about climate change can create a perception of disinterest, as people may deny the issue or avoid conversation about it in order to protect themselves. Many participants, mostly patients, also discussed the uncomfortable nature of the topic as a reason for not talking about climate change in society.

"I think it would be harmful [the influence of anxiety on dialogue]*. People will shut down, and I don't even know if they would listen [...] People will just shut down." (Patient_Wallonia)*

"I think we collectively bury our heads in the sand on these issues." (GP_Brussels)

Although informants acknowledged that people with lower SES are most vulnerable to the health effects of climate change and need more attention in terms of prevention, many respondents felt that they may also have little interest in the topic, because they have other priority concerns and few resources to adapt. Therefore, some GPs also shared their fears of triggering guilt and shame by confronting them with helplessness when talking about climate change solutions. It is important to note that some participants had the same concerns about the elderly, but to a lesser extent.

"If you talk to people [with lower SES] *about [...] that air quality is a problem, they don't care... It's not an issue for them. Their issue is actually, if you're in a precarious situation [...] it's how can I, how can I earn a living, how, where can I find enough money?" (Patient_Brussels)*

"And sometimes it's complicated because, it's true that sometimes, we share and then we realise that it makes people really uncomfortable because they say, "Well, that's all well and good, but I, I can't do anything with your advice…"". (GP_Brussels)

4.4. Discussion enablers and communication strategies

4.4.1. Opening the door to discussion

When participants reflected on potential communication enablers that could help open the discussion on the adverse effects of climate change, they talked primarily about the trusting relationship that family physicians and patients build together. Considering trust as a prerequisite for addressing sensitive issues, both GPs and patients felt that it would be easier to discuss the impacts of climate change on health with patients with whom family doctors had already established a trusting relationship.

> *"It also depends on how long you've known the patients, the connection you have with them, the relationship you have with them. I think that when you have a much longer relationship, a relationship of trust, [...] with them it might be easier to address the topic, if they're interested." (GP_Brussels)*

When asked to elaborate on other potential communication enablers, informants described several elements that could open the door to discussion by stimulating patients' curiosity and questions to ask their family physician. Among these enablers, participants, mainly GPs, most often cited “acting as a role model”, believing that seeing their family doctor engage in climate-friendly behaviours could encourage patients to talk about it during consultations. Many participants also cited the use of visual and educational materials, such as posters and leaflets, in waiting rooms and GP office, as another effective way to open the discussion with patients.

> *"Posters talk to patients. It opens a conversation, so I think that would be a good approach. Little flyers, put up everywhere, that they could take, that they could look at and that would raise questions. And then, the dialog would be even easier.” (GP_Wallonia)*

Finally, several participants, mainly those working or consulting in CHCs, discussed the importance of integrating the health impacts of climate change into health promotion activities, not only to raise awareness among a larger number of patients, but also to get them to talk about it with their GP later.

> *"Well, of course, when you organise* [health promotion] *activities at the community health centre, it always raises questions.” (GP_Brussels)*

4.4.2. *"There will never be a universal scenario for everyone"*

When asked to consider effective communication approaches that GPs should use to talk about the health effects of climate change, participants emphasised the importance of family physicians tailoring their messages to each individual patient, considering the person's reality and needs.

> *"It depends on who you have in front of you [...] I don't know if there's a... a way [...] There will never be a universal scenario for everyone. [...] It's not going to be the same sentence...we're not going to develop in the same way with everybody." (Patient_Brussels)*

Informants described varied communication approaches that could address that need, although few had experience communicating about climate change and health during consultations. Among them, one patient spontaneously discussed eco-anxiety with his family physician after noticing a climate change sticker on her office door, and three GPs mentioned that they had already addressed climate change and health with some patients, linking it to their personal health issues (such as asthma and allergies) or talking about co-benefits.

As everyone relate to health, most respondents, mainly GPs, emphasised the importance to stress the link between climate change and health, so that patients can feel personally concerned by the issue. Several participants felt that climate change is usually perceived as a global, theoretical, and abstract problem, so that people look at it from distance and do not feel concerned about it. According to them, framing climate change as a health issue rather than an environmental problem would probably make it more present, local, and concrete for patients.

> *"It* [climate change] *should not be abstract. Because the problem with climate change and communicating about it is that often [...] it seems something very distant. Distant in time, distant geographically... "It's not a problem here, it's a problem there" ... so I think that to get people's attention, you must find a key that allows them to understand that it concerns them, directly." (Patient_Brussels)*

> *"Well, I find that health is a really good entry point, because it really helps to show the extent to which climate change is going to have an impact on every single person [...] everybody needs to be concerned about it, because everyone is going to be affected." (GP_Brussels)*

Moreover, most informants, especially family physicians, felt that linking patients' personal health problems to climate change would be much more meaningful to them, and that GPs should seize

every opportunity to do so during medical encounters, such as when patients consult about asthma, allergies, for blood test results or annual check-ups.

> *“And it's true that it would be interesting if on the occasion of the health problems that I have, she, she* [his GP] *makes a connection with the...the effects of climate change on health.” (Patient_Wallonia)*

As climate change is a worrying issue, most respondents discussed the importance of communicating positive messages by talking about solutions that people can adopt to preserve their health and the environment. According to them, conveying such concrete solutions would motivate patients to act and minimise their anxiety as well as their feeling of helplessness. Many GPs illustrated these actions with the concept of co-benefits, in particular active mobility, and nutrition, but only a few were able to explain in detail the two-fold benefit[13] related to it.

> *" I always direct towards something concrete [...] but we make a lot of the links between environmental and health co-benefits […] And, and they* [patients] *are directly in something concrete, with something accessible for them [...] “Look, going to the bakery on foot, by bike... plus you'll pollute less, it's great!”” (GP_Wallonia)*

A few respondents also reported on the possibility of discussing the impacts of climate change on health by using related recent and local events, such as storms, floods, or heatwaves, to bring climate change into present and make it more local and concrete for patients.

> *"Well, when we see that there's... that there's a tragedy in...in the region, or, in any case, big floods, or big fires in Europe or that sort of thing, maybe we can use that as a basis for a conversation." (GP_Wallonia)*

While discussing the content of climate change and health communication, participants also focused on how to talk to patients. Many participants stressed the importance of speaking to patients' values and exploring their receptivity to climate change and health. One patient added that GPs should avoid giving directives, met with resistance, but should inform and empower their patients to make their own decisions.

> *"Probably start with...already at the patient level and, and try to assess what can be heard or what can interest the person.” (GP_Brussels)*

13 Actions that not only benefit health, but also protect the environment, making it safer and having a positive impact on people's health.

Due to the complexity of the topic, some informants also mentioned that GPs should pay attention to use simple and accessible messages. Some others stressed the importance to avoid personal blame and judgement, that could lead to guilt, as well as stressful messages, that could cause anxiety, both of which are potential barriers to communication. In addition, a GP stressed the need to avoid controversial conversations by emphasising the link between climate change and health, as family physicians have this expertise and therefore, the legitimacy to talk about it.

> *"And with climate-sceptics, I'm not going to get into the debate unless there's a link with health, in which case I'd feel more comfortable." (GP_Wallonia)*

Finally, many informants, mostly GPs, believed that family physicians should hand patients with accurate and credible sources of information, for them to get further informed about the adverse effects of climate change.

> *"Providing patients with...websites at least would enable them to find the right information." (GP_Wallonia)*

5. Discussion

This chapter discusses the key findings of the research, focusing first on barriers to communicating about climate change and health that can be overcome through appropriate communication approaches, and then describing the main effective strategies that can be used during medical encounters.

5.1. Main findings and comparison with the existing literature

Family physicians and patients recognised climate change as a relevant public health issue in which GPs have a role to play by raising awareness of the health impacts of climate change and the solutions to address them; by caring for people while adapting clinical practice; by acting as role models; and by collectively advocating for the implementation of mitigation and adaptation measures. However, most participants never experienced communication about the adverse health effects of climate change during primary care consultations. The main barriers identified were time constraints and work overload, the lack of knowledge among GPs, the perceived lack of link between climate change and health, and people's disinterest and lack of concern about the issue.

5.1.1 Disinterest and lack of concern

First, respondents cited the distance with which people experience climate change as a barrier to talking about its adverse health effects, because it makes individuals appear disinterested and unconcerned. This finding aligns with the existing literature suggesting that if everyone perceives climate change with a psychological distance (PD), then each individual's cursor can move between distal and proximal perceptions of climate change, influencing the concern and interest attributed to the problem, as well as the propensity to engage in climate actions (50–53). Trope and Liberman defined PD as the way in which an object (e.g. climate) is perceived as close to or distant from people's immediate experience and described it along temporal, geographical, social and hypothetical (likely versus unlikely) distances (53). Recent studies have shown that populations, especially in Western countries, experience climate change as psychologically distant because of the long-time lag between its causes and effects (temporal distance), and because of the perception that the poorest countries and populations are the hardest hit by climate change (geographical and social distance) (20,54). Although many studies have shown that a proximal perception of climate change is more likely to lead to an increased interest and pro-environmental behaviours, some others have also highlighted many inconsistencies regarding the relationship between PD and climate actions, showing that people who perceive climate change as distal may engage in climate-friendly behaviours, while those who perceive it as proximal may not (50–53). Indeed, the existing literature

posits that climate change PD may be influenced by other variables, such as beliefs associated with climate change (scepticism, sense of self-efficacy…), intra-personal characteristics (empathy, political orientation…) or emotions stirred by climate change (fear, anxiety…) (53).

Although they acknowledged that climate change is happening *"here and now"* in Europe, most research participants themselves perceived it with distance. However, it is difficult to say how distal or proximal their PD was and how this influenced their concerns, interest, and willingness to engage in climate action. Ultimately, what may be important is not to measure and try to influence the level of PD, but to address climate change in a way that makes patients feel personally concerned and that triggers a growing interest that may later lead to climate-friendly behaviours.

Second, although some study informants believed that negative emotions about climate change may potentially motivate people to talk about it and to act, many cited climate anxiety as another barrier to communicating about the adverse health effects of climate change, believing that people may deny or avoid the discussion to protect themselves in the face of such an overwhelming threat. This finding is consistent with recent literature suggesting that negative emotions induced by climate change are associated with different reactions (53,55–57). Indeed, while climate anxiety can be a rational response that can motivate people to communicate about it and to adopt pro-environmental behaviours, under certain conditions (e.g. context, personality…) it can also foster coping strategies, such as denial and avoidance that reduce people's anxiety but also prevent them from talking about and taking action on the health impacts of climate change (53,56,57). Therefore, both GPs' and patients' emotional responses to climate change should be considered in climate change and health communication, as they will influence it. GPs should clarify whether they and their patients experience climate anxiety and whether this translates into adaptive or maladaptive responses. Indeed, discussions may be counterproductive if GPs and/or patients are not open to talking about it.

Finally, many study informants indicated that they found it difficult to discuss the health impacts of climate change with people of low socio-economic status (SES), as they perceive them to have little interest in the topic due to other priorities and limited resources for adaptation. Previous research has shown that physicians behave differently towards low SES patients, who receive less information and a less participatory approach during consultations due to doctors' misperceptions of their desire and need for information, and their ability to participate in their own care (58,59). Having a low SES does not mean that people do not have ecological concerns, and such issues must be addressed as they would be with other patients during primary care consultations. In fact, communication about climate change and health must even be prioritised with those who are the most vulnerable to the impacts of climate change on health (such as low SES patients), just as any prevention focuses on the

most exposed groups. Given their reputation for reaching out to the most vulnerable people in society, family physicians are well-positioned to inform low SES patients about the adverse health effects of climate change and solutions to address them. By failing to do so, GPs may therefore themselves be contributing to deepening health inequalities.

5.1.2 Communication strategies

Effective communication strategies are essential to allow family physicians to overcome the above-mentioned barriers. Research participants described varied communication approaches that they believed to be effective for talking about climate change and health, and which are discussed in the following three sections: (a) the enablers, (b) the form and (c) the content.

a. The enablers

Participants identified a trusting GP-patient relationship and GPs acting as role models as essential communication enablers for discussing the health impacts of climate change with patients. This is consistent with research showing that talking about sensitive issues and behaviour change is facilitated by a trusting relationship that GPs and patients build up over time through regular and long-term contact (60). In this sense, the existing literature on climate change communication shows that GPs, who are trusted and respected by their patients, are well-positioned to talk to them effectively about the adverse health effects of climate change (25,33). Research also posits that acting as an appropriate role model enhances the credibility of the health messages that family physicians convey to their patients (60), and that credibility of GPs is essential for talking about the health impacts of climate change (33). Indeed, if it is important for patients to see their GP acting authentically by adopting themselves climate-friendly behaviours or engaging for climate action (25,33), family doctors are also encouraged to actively talk about their own behaviours to give their patients a sense of efficacy by showing them that action is realistic and achievable (25). In addition, many GPs in the study felt that talking about climate change and health could strengthen the therapeutic relationship, which is in line with research emphasising that this is particularly true when patients and GPs have similar attitudes towards climate change (33).

b. The form.

Respondents cited the importance of GPs tailoring their messages to each patient, but also of informing and empowering them to make their own decisions. Although they did not mention it explicitly, participants referred to patient-centred communication (PCC), which is consistent with the existing literature (25,26,33,34). PCC is a widely used health counselling strategy, in which a trusting GP-patient relationship is essential (33). As defined by Epstein, PCC consists of (1) eliciting patients' perspectives (e.g., values, needs, expectations…), (2) understanding patients in their psychosocial

context, (3) reaching a shared understanding of the problem and its treatment that is consistent with patients' values, and (4) involving patients to the degree they wish (33,34). Applied to climate change communication, PCC would therefore help GPs to identify whether or not patients are receptive to the topic, and to tailor messages to each patient so that they are more relevant to their needs and expectations. By paying attention to their patients' personal situation and the values that are most important to them (personal health, family, community…), GPs can link the elicited values with others associated with a more sustainable life and subsequently influence their patients' propensity to adopt climate-friendly behaviours.

c. The content.

Respondents stressed the importance of framing climate change as a present, local, and concrete issue, as they felt it is generally perceived as a global, theoretical, and abstract problem that people may not feel personally concerned about. Trope and Liberman state that people can mentally construct an object in either an abstract or concrete way, depending on the distance with which they perceive it. Therefore, when an object is perceived as psychologically distant, its representation is more abstract and global, whereas a psychologically closer perception makes it more concrete and present (50–53,61). Informants identified two main communication approaches that could address the need to bring climate change into present, and that have been reported in the literature as key elements in addressing climate change in a way that makes it personally relevant and tangible to patients: (1) making the link with health, and (2) talking about solutions.

The current literature emphasises the use of the health argument as an interesting communication lever that can increase people's concern and interest in climate change and also help to avoid controversial debate during consultations (28,54,62). Research has shown that the way people frame a problem can influence how they understand it and what they think are possible solutions to it, potentially driving subsequent behaviour change (63,64). Thus, health professionals are encouraged to frame climate change as a health issue, which is perceived as concrete, rather than as an environmental problem, which is considered as abstract (12,25,54,62–64). Indeed, respondents, as well as the literature, described health as being a universal and widely shared value that everyone can relate to, and that has the potential to make climate change more personally relevant to patients, as it threatens their own health and that of their loved ones (25,63,64). Furthermore, in line with recent literature, study informants felt that seizing every opportunity to link patients' personal health problems, such as asthma, allergies, etc., to climate change would be even more meaningful to them (17,28,33,34).

Climate change being a worrying issue, participants emphasised the importance of framing positive messages by talking about solutions, such as active mobility and nutrition co-benefits, that patients can adopt to preserve their health and the environment. If the current literature considers this communication approach as another lever that brings climate change into present (12,54), talking about solutions, such as co-benefits, is also described as a way to reduce patients' anxiety and feeling of helplessness (12,26). Co-benefits are *«daily choices and key changes that patients can make within their own lives and that will ultimately benefit both their own health and that of the environment»* (65). It is a frequently stated communication strategy, described as a more optimistic way to address climate change and health during primary care consultations (16,26,54) and to which people positively react (63,64). Conveying such positive messages and concrete solutions, and highlighting how they align with patients' values, have the potential to empower and motivate them to adopt more climate-friendly behaviours, knowing that these actions will not only benefit their health, but also protect and make the environment safer, which will ultimately have a positive impact on people's health (9,34,62,63,66).

5.2. Limitations and strengths

Several limitations exist within this study. First, the research focused on the Brussels-Capital region and on a single province of Wallonia (Hainaut), excluding other Walloon areas and the Flemish region. In the future, it would be interesting to expand the study to these other areas to improve maximum variation and to see if any new elements emerge from it.

Second, it is important to note that the group of respondents lacked heterogeneity: the respondents who participated in the research were all interested and concerned about climate change and recognised it as a relevant public health issue in which GPs have a role to play. It would have been interesting to know the perceptions of patients and GPs with more diverse views on the topic.

Third, a social desirability bias may have influenced participants' attitudes and responses, due to climate change being a sensitive issue and to my insider position. In addition, my own experience as a GP may also have influenced my perception and understanding of the context and of the issue, potentially biasing the research findings. For instance, participants referred to climate change as a general and theoretical issue, providing few details about its manifestations and health consequences in Belgium. This may be due to the way the questions were asked, or how informants interpreted them.

Finally, given the difficulty, if not impossibility, of translating all the nuances of one language into another, the fact that the interviews were conducted in French and that the quotes had to be translated into English probably had an impact on their richness.

To date, this qualitative study is (one of) the first to explore climate change and health communication in general practice in Belgium. One of its strengths is that it explored different types of GP practices, but also considered patients' views and perspectives on the possibility of integrating climate change and health in primary care consultations. The findings of this qualitative research therefore provide an opportunity to reflect on possible actions that would meet patients' expectations and needs, and that would help family physicians to talk about the health impacts of climate change during medical encounters.

6. Recommendations

The study's findings provide insights to consider possible actions that could help GPs in integrating communication about climate change and health into their daily practice. Based on the Belgian context and on the views of the GPs and patients who participated in the research, the recommendations for practitioners and policy makers are the following ones:

1. ***Raising public awareness of the link between climate change and health*** to encourage people to consult their family physicians on this issue, thus facilitating the dissemination of messages from GPs to their patients. This can be done through the development of sensitisation programmes on the link between climate change and health by the public authorities responsible for prevention and health promotion (e.g. developing official posters, leaflets, prevention website, advertisings...), or through the use of the media (e.g. newspapers, TV news…). In both cases, however, communication strategies must take care to convey positive rather than negative messages.
2. ***Improving GPs' knowledge about climate change and health:*** Although several environmental health training courses are already offered by institutions familiar to practitioners (the Scientific Society of General Medicine (SSMG), the Federal Public Services (SPF)…), it is important that the bodies responsible for the continuing medical education of GPs further strengthen the training offer on climate change and health. It is also essential that all Belgian universities integrate environmental health, including the adverse health effects of climate change, in the medical curriculum so that new generations of physicians will be well-equipped to deal with environmental health issues in the future.
3. ***Publicly recognising the role that GPs have to play in the face of climate change and its impacts on health:*** To encourage GPs to get trained and to talk about the impacts of climate change on health with their patients, their role in the face of climate change should be officially recognised and supported not only by health institutions (The National Institution for Health and Disability Insurance (NIHDI), SPF…) and professional organisations (Ordre of physicians, The General Medicine College (CMG), SSMG, etc.), but also by their peers (e.g. by including environmental issues such as climate change in peer reviews (GLEMs), for a better exchange of practice on this topic).
4. ***Developing practical tools to help GPs integrate climate change and health into their daily practice,*** such as clear medical guidelines tailored to the realities of primary care consultations, or tools to improve communication skills on sensitive issues such as climate change.

5. ***Changing the paradigm in healthcare to enhance prevention:*** To address health issues such as those related to climate change, GPs would need to be given the means to better integrate prevention into their daily practice. This could be done, for example, through the implementation of prevention-dedicated consultation, which would be billable and reimbursable to patients.

The study also provides opportunities for future research. As the opinions of people with low SES were unrepresented in this study, further research is needed to explore their views and concerns about the health effects of climate change, and their perceptions of the possibility to discuss it with GPs during primary care consultations. Such research may provide the insights needed to overcome the misperception of disinterest that has been attributed to them, and that prevents family physicians from talking about climate change and health with them. In the future, it would also be interesting to assess the actual impact of such communication on patients' health and well-being, and on the therapeutic doctor-patient relationship.

7. Conclusion

Although patients and family physicians recognise climate change as a matter of prevention, discussion about its impacts on health is still not a standard during general practice consultations in Belgium. The study's findings highlight various barriers to effective communication about the adverse health effects of climate change, and provide insights informing recommendations that could help GPs in integrating communication about climate change and health into their daily practice. To facilitate communication about climate change and health during primary care consultations, it is important not only to raise awareness that climate change can indeed affect people's health and that it is a topic that can be discussed with GPs, but also to reinforce the legitimacy that family physicians need to integrate this issue into their daily practice and to fulfil their role in addressing the public health threat posed by climate change.

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NB: Please note that due to an issue with the reference management tool (Zotero), citations 37 and 38, as well as the corresponding references, do not exist.

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Annexes

ANNEX 1 – CONTACT EMAIL FOR GENERAL PRACTITIONERS (EN/FR)

CONTACT EMAIL FOR GENERAL PRACTITIONERS (EN)

Dear colleagues,

I am contacting you to propose you to participate in a study that I am carrying out as part of my master's thesis in Public Health (health system and disease control) at the Institute of Tropical Medicine (in Antwerp).

This study aims to better understand how the impacts of climate change on health are addressed in general practice consultations, as well as the reasons influencing whether or not the discussion is initiated with patients. The results of this research will then inform the development of possible tools and resources that could support general practitioners in their daily practice.

For this purpose, I would like to propose you to take part in an individual interview of a maximum of 1 hour (organized at your convenience), during which you will have the opportunity to share your opinions, experiences and recommendations on this topic.

Patients' perspectives will also be explored during interviews of the same duration. To allow this, could you propose some of your patients (over 18 years of age, speaking French or English) to participate in this study?

You will find attached an information sheet in which the modalities of this research are described in more details, and which you can share with patients who would be potentially interested in participating. They will also find my contact details there and can then contact me directly, by email or by phone, if they wish to go further.

If you would like more information before deciding whether or not to take part in this research, I am at your disposal to answer your questions, by email, by phone, or during a meeting organized according to your availability.

Kind regards

Dr Alyssia Ferrarese

INAMI: 1-97939-38-003

alyssia.ferrarese@gmail.com

+32494670456

CONTACT EMAIL FOR GENERAL PRACTITIONERS (FR)

Chers confrères, chères consœurs,

Je vous contacte pour vous proposer de participer à une étude que je réalise dans le cadre de mon mémoire de master en Santé Publique (système de santé et contrôle des maladies) à l'Institut de Médecine Tropicale (à Anvers).

Cette étude a pour but de mieux comprendre comment les impacts du changement climatique sur la santé sont abordés en consultation de médecine générale, ainsi que les raisons motivant ou non l'initiation de cette discussion avec les patient.e.s. Les résultats de cette recherche permettront ensuite d'élaborer d'éventuels outils et ressources qui pourraient soutenir les médecins généralistes dans leur pratique.

Pour ce faire, je vous propose de prendre part à un entretien individuel d'une durée d'1h maximum (organisé à votre meilleure convenance) au cours duquel vous aurez l'occasion de partager vos opinions, expériences et recommandations sur le sujet.

Les points de vue des patient.e.s seront également explorés au cours d'entretien de la même durée. Pour permettre cela, vous serait-il possible de proposer à vos patient.e. s (âgé.e.s de plus de 18 ans, parlant français ou anglais) de participer à cette étude ?

Vous trouverez en pièce jointe, une fiche informative dans laquelle les modalités de cette recherche sont décrites plus en détails, et que vous pouvez partager avec les patient.e.s qui seraient potentiellement intéressé.e.s à y participer. Ceux/celles-ci y trouveront également mes coordonnées et pourront ensuite me contacter directement par email ou par téléphone s'ils/elles souhaitent aller plus loin.

Si vous souhaitez plus d'informations avant de décider de prendre part ou non à cette recherche, je me tiens à votre disposition pour répondre à vos questions, par email, par téléphone, ou encore lors d'une rencontre organisée selon vos disponibilités.

Cordialement,

Dr Alyssia Ferrarese
INAMI : 1-97939-38-003
alyssia.ferrarese@gmail.com
+32494670456

ANNEX 2 – INFORMATION SHEET FOR PARTICIPANTS (EN/FR)

INFORMATION FOR PARTICIPANT (EN)

Talking to patients about the health impacts of climate change in primary care: a qualitative study among Belgian general practitioners

You are invited to voluntarily participate in a study conducted as part of my Master's thesis in Public Health (Health System and Disease Control), carried out at the Institute of Tropical Medicine (in Antwerp). This qualitative research is described in more detail in this information sheet. However, if you have any questions, do not hesitate to address them with me so that I can provide the necessary clarifications.

Purpose and description of the study

Climate change adverse effects on people's health are already being felt and healthcare systems worldwide are increasingly being confronted with it, including in Europe and in Belgium.

This research aims to better understand how the impacts of climate change on health are addressed in general practice consultations, as well as the reasons for initiating or not initiating this discussion with patients. To this end, the interviews will explore the concerns of family doctors, and those of patients, regarding climate change, as well as their perceptions and points of view on the role that general practitioners could play in the face of the consequences of climate change on health. The interviews will also provide a better understanding, on the one hand, of the barriers and challenges preventing primary care physicians from addressing this topic with their patients, and on the other hand, of the facilitators for initiating this conversation as well as the communication strategies used for this purpose.

Time required for participation

You will be asked to reserve a maximum of one hour for an interview.

Voluntary participation

The participation in the study is entirely voluntary.

All the information you provide during the interview is valuable for this research. Therefore, your permission to record the interview is requested, so that it can be transcribed later. If you prefer, recording can be replaced with note-taking. If none of these options suits you, you can refuse to participate in the study, as there is no obligation to contribute.

Discomfort

If during the interview you feel uncomfortable with the topic discussed, you do not have to answer any questions asked, or to withdraw from the study at any time.

Benefits

By participating in this study, you will contribute to the development of knowledge and actions aimed at supporting general practitioners and their patients in the face of the climate change and health issue (e.g. development of trainings and tools for consultation assistance…)

Compensation

If you wish, sources of information and tools will be provided to you at the end of the interview as a token of appreciation for the time you have spent to be part of this research (references to useful sources and soft copy of a reference book on environment and health for general practitioners, information sheet on environment and health for general practitioners as well as for patients)..

Ethics committee

This study was reviewed and approved by the Institutional Review Board of the Institute of Tropical Medicine (Antwerp, Belgium).

Privacy and data protection

All information collected during the interview will be treated under strict confidentiality. The processing of the personal data will be done in compliance with the European General Data Protection Regulation (GDPR) and the legal basis for the processing is your consent. Any identifiable data will be pseudonymized in order to protect your privacy as much as possible, meaning that your name will be replaced with a code and no one will be able to identify you directly. In addition, only the supervisor of this thesis and myself will have access to the information you provide.

At the end of the research, the results will be presented and defended in front of a jury as part of the evaluation of the Master's thesis. The results will then also be shared with the environmental unit of the Scientific Society of General Medicine (SSMG) in order to contribute to the development of future tools and resources. Finally, if the opportunity arises, results might be published afterwards. This reporting will not include your personal data.

You have the right to request access and correction to the personal data that we collect from you.

Contact for questions regarding the study

If you have any questions or comments to share about this study, whether they arise before, during or after the interview, please do not hesitate to contact me:

Dr Alyssia Ferrarese
Email: alyssia.ferrarese@gmail.com
Phone number: +494670456

ITM's Institutional Review Board
Email: irb@itg.be

ITM's Data Protection Officer (DPO): Jef Verellen
Email: jverellen@itg.be.

INFORMATION POUR LES PARTICIPANTS (FR)

Parler aux patients de l'impact du changement climatique sur la santé dans les soins primaires : une étude qualitative menée auprès des médecins généralistes belges

Vous êtes invités à participer volontairement à une étude menée dans le cadre de mon mémoire de Master en Santé Publique (Système de Santé et Contrôle des Maladies), réalisé à l'Institut de Médecine Tropicale (à Anvers). Cette recherche qualitative vous est décrite plus en détail dans cette fiche informative. Toutefois, si vous avez des questions, n'hésitez pas à me les faire parvenir de façon à ce que je puisse y apporter les clarifications nécessaires.

But et description de l'étude

Les effets néfastes du changement climatique sur la santé et le bien-être des populations se font déjà sentir et les systèmes de santé du monde entier y sont de plus en plus confrontés, y compris en Europe et en Belgique.

Cette recherche a pour but de mieux comprendre comment les impacts du changement climatique sur la santé sont abordés en consultation de médecine générale, ainsi que les raisons motivant ou non l'initiation de cette discussion avec les patients. Pour cela, les interviews exploreront les préoccupations des médecins de famille, et celles des patients, concernant le changement climatique, ainsi que leurs perceptions et points de vue sur le rôle que les généralistes pourraient jouer face aux conséquences du changement climatique sur la santé. Les entretiens permettront également de mieux comprendre, d'une part, les obstacles et défis empêchant les médecins de première ligne d'aborder le sujet avec leurs patients, et d'autres part, les facilitateurs à l'initiation de cette conversation ainsi que les stratégies de communication utilisées à cet effet.

Temps de participation estimé

Il vous sera demandé de réserver un maximum d'une heure pour l'entretien.

Participation volontaire

La participation à l'étude est entièrement volontaire. Toutes les informations que vous fournirez lors de l'entretien sont précieuses à la réalisation de cette recherche. C'est pourquoi, votre permission d'enregistrer l'entretien vous est demandée afin qu'il puisse être retranscrit ultérieurement. Si vous préférez, l'enregistrement peut être remplacé par une prise de notes. Si aucune de ces options ne vous convient, vous pouvez bien sûr refuser de participer à l'étude, car il n'y a aucune obligation d'y contribuer

Inconfort potentiel

Si pendant l'interview, vous vous sentez inconfortable par rapport au sujet abordé, vous pouvez refuser de répondre à toute question vous mettant potentiellement mal à l'aise, ou encore d'arrêter l'entretien et de vous retirer de l'étude à tout moment.

Bénéfices

En participant à cette étude, vous contribuerez à l'enrichissement des connaissances, et au développement d'actions visant à soutenir les médecins généralistes et leurs patients face à la thématique du changement climatique et de la santé (ex : développement de formations et d'outils d'aide à la consultation…).

Compensation

Si vous le souhaitez, des sources d'information et outils vous seront transmis en fin d'entretien, en guise de remerciement pour le temps que vous avez consacré à participer à cette recherche (références à des sources utiles et copie électronique d'un ouvrage de référence sur l'environnement et la santé pour les médecins généralistes, fiches informatives sur la santé et l'environnement pour les médecins généralistes ainsi que pour les patients).

Comité d'éthique

Cette étude a été examinée et approuvée par le comité d'examen institutionnel de l'Institut de Médecine Tropicale (Anvers, Belgique).

Vie privée et protection des données

Toutes les informations récoltées au cours des interviews seront traitées de manière strictement confidentielle. Le traitement des données personnelles sera effectué dans le respect du Règlement Général sur la Protection des Données (RGPD) et la base légale du traitement est votre consentement. Toute donnée identifiable sera pseudonymisée afin de protéger au maximum votre vie privée, ce qui signifie votre nom sera remplacé par un code et que nul ne pourra vous identifier personnellement. De plus, seule la superviseuse de ce mémoire et moi-même auront accès aux informations que vous fournirez.

A la fin de la recherche, les résultats seront présentés et défendus devant un jury dans le cadre de l'évaluation du mémoire de Master. Les résultats seront ensuite également partagés avec la cellule environnement de la Société Scientifique de Médecine Générale (SSMG) dans le but de contribuer à l'élaboration de futurs outils et ressources. Enfin, si l'occasion se présente, les résultats pourraient être publiés ultérieurement. Ce rapport n'inclura pas vos données personnelles.

Vous avez le droit de demander l'accès et la correction des données personnelles que nous collectons auprès de vous

Contact pour toute question relative à l'étude

Si vous avez des questions ou des commentaires à partager au sujet de cette étude, qu'elles se présentent avant, pendant ou après l'entretien, n'hésitez pas à me contacter :

Dr Alyssia Ferrarese
Email: alyssia.ferrarese@gmail.com
Téléphone: +32494670456

Comité d'Ethique de l'IMT
Email : irb@itg.be

Data Protection Officer (DPO) de l'IMT : Jef Verellen
Email : jverellen@itg.be

ANNEX 3 – DOCUMENTATION OF PARTICIPANT CONSENT (EN/FR)

DOCUMENTATION OF PARTICIPANT CONSENT (EN)

I, undersigned, hereby confirm that the information sheet has been explained to me and that I voluntarily consented to participate in the study. It was clear that I could freely choose to participate in the research.

☐ I confirm that I had the opportunity to ask questions and discuss the study. If I had questions, the interviewer answered them as completely and clearly as possible. All questions asked were answered.

☐ I confirm that I have been clearly explained that I did not have to answer any interview question when I did not want to and that the I could withdraw from the study at any moment, even after concluding the interview.

☐ I confirm that I have been clearly explained that any information identifying me, e.g. name or address, will not be shared with anybody outside of the researcher and her master thesis coach, and that the information provided will be treated under strict confidentiality. I have also been informed that the results will be defended in front of a jury as part of the master thesis, will then also be shared with the SSMG' s environmental cell in order to contribute to the development of future tools and resources, and finally, might be published afterwards.

Date (dd/mm/yy):

_____

Name of participant: Name of researcher:

_____

Signature of participant: Signature of researcher:

Participant ID number: ……

DOCUMENTATION DU CONSENTEMENT DU PARTICIPANT (FR)

Je soussigné(e) confirme par la présente que la fiche d'information m'a été expliquée et que j'ai volontairement consenti à participer à l'étude. Il était clair que je pouvais choisir librement de participer à la recherche ou non.

☐ Je confirme que j'ai eu l'occasion de poser des questions et de discuter de l'étude. Si j'avais des questions, l'intervieweuse y répondait de la manière la plus complète et la plus claire possible. Toutes les questions posées ont reçu une réponse.

☐ Je confirme qu'on m'a clairement expliqué que, lors de l'entretien, je pouvais ne pas répondre à une question lorsque je ne le voulais pas et que je pouvais me retirer de l'étude à tout moment, même après avoir conclu l'entretien.

☐ Je confirme qu'on m'a clairement expliqué que toute information m'identifiant, par exemple mon nom ou adresse, ne sera partagée avec personne en dehors de la chercheuse et de sa superviseuse de mémoire, et que les informations fournies seront traitées de manière strictement confidentielle. J'ai également été informé(e) que les résultats seront défendus devant un jury dans le cadre du mémoire de master, qu'ensuite ils seront également partagés avec la cellule environnement de la SSMG afin de contribuer au développement de futurs outils et ressources, et enfin, qu'ils pourraient être publiés ultérieurement.

Date (jj/mm/aa)

_____

Nom du participant Nom de la chercheuse

_____

Signature du participant Signature de la chercheuse

Numéro d'identification du participant : .....

ANNEX 4 – INTERVIEW GUIDE (EN/FR)

Topic guide (EN)

Talking to patients about the health impacts of climate change in primary care: a qualitative study among Belgian general practitioners

Patients

General information

1. ***How old are you?***
2. ***What sector do you work in?***
3. ***What type of practice does your general practitioner work in? (solo, group, CHC)***
4. ***How long does a consultation with your general practitioner last?***
5. ***How long have you been seeing your current general practitioner?***
    a. How old is your GP (approximately)?
6. ***Why did you choose to consult this particular type of practice?***
    a. How would you compare the practice you currently consult with other types of practices you may have consulted in the past?
7. ***What space do prevention and health promotion have in your GP's medical practice?***

Patient's perception of the impacts of climate change on human health

8. ***How do you think climate change is impacting or could impact your health, and that of your relatives?***
    a. How much do you consider yourself and your relatives at risk of facing the impacts of climate change on health?
    b. Who do you think is or will be affected the most by the impacts of climate change climate change on health?

Patient's sources of information about climate change and health

9. ***How would you rate your level of knowledge about climate change and its effects on health?***
    a. Where would you look for more information on this topic?
    b. Of the sources you mentioned, which would be your main source of information? Why?
    c. **(If GPs are among the sources of information mentioned)** Why do you consider your general practitioner as a source of information on this topic?
        - How would you rate your level of trust in your GP as a source of information on climate change and health?
    d. **(If GPs are not among the sources of information mentioned)** Why did you not spontaneously mention your general practitioner as a potential source of information on the health impacts of climate change?

Patients' perception about the communication on climate change and its health consequences with GPs.

10. ***Have you ever discussed about the adverse effects of climate change on health with your GP?***
    a. **(If yes):** Who have brought up the issue during the medical consultation? (You or your GP)
        - What "entry door" have your GP or yourself used to address this topic during the medical encounter?
        - How did you experience this discussion with your GP?
        - How comfortably did your GP have this conversation with you?
    b. **(If no):** What could be the reasons why this topic has never been discussed during a medical consultation (by your general practitioner or by yourself)?
        - How comfortable would you feel discussing this topic with your general practitioner?

11. ***How should GPs communicate with their patients about the health effects of climate change?***
    a. What communication approaches have your GP used or should use to address the topic?

12. ***Given that the effects of climate change on health are already being felt in Europe, and in Belgium too, what kind of information would you like to receive from your general practitioner on this topic? (Why?)***

Patients' perceptions of the role of GPs tackling climate change and its health consequences

13. ***How would you define GPs' role in tackling climate change and its health consequences?***
    a. Why do you think GPs have or do not have a role to play in this?
    b. In your opinion, why would GPs be better positioned than specialists to discuss this topic with their patients?

14. ***In one of the interviews conducted with doctors, advocacy was cited as one of the roles they could play in addressing the health effects of climate change. What do you think about this potential role for general practitioners?***

Barriers and facilitators

15. ***How do you perceive the overall relevance of climate change?***
    a. Have you, or your relatives, ever experienced any climate change-related event? Would you feel comfortable talking about it?
    b. How do you personally feel regarding all recent climate change manifestations and communication about it?
    c. How easily do you address this topic with people around you (relatives, friends or colleagues)? (is it a concern, a distant political issue, a non-topic)
        - Which factors do you think prevent these conversations?
        - Which factors do you think facilitate these conversations?

16. ***Based on the grief curve, where do you stand in relation to climate change (eco-anxiety)?***
    a. How may this influence the communication you might have with your GP about the impacts of climate change on health?

17. ***What other elements would be a barrier for you to have this conversation with your GP?***

18. ***What factors would encourage you and other patients to accept having this conversation with a GP?***

Needed resources and changes

19. ***What useful changes and resources would be needed to reduce these barriers?***
    a. A patients' level?
    b. At GPs' level?

General Practitioners (GPs)

Information about your general practice

1. ***How old are you?***
2. ***How long have you been working as a general practitioner?***
3. ***What type of practice do you work in?***
    a. How many patients do you see per day?
    b. How long does a consultation last?
    c. What space do prevention and health promotion have in your daily medical practice?
4. ***Why did you choose this type of practice?***
5. ***Have you had experience with other types of general practice in the past?***
    a. What are the main differences you have observed between these different types of practices (number of patients seen per day? consultation time? role of prevention and health promotion)?

Relationship between GPs' practices and climate change.

6. ***How do you think climate change affects your patients' health?***
    a. Are there some examples you would like to share about patients' whose health has already been impacted by climate change?
    b. Who do you think is affected the most by the impacts of climate change on health?

7. ***Have issues related to climate change and health ever brought into your practice?***
    a. **If yes**: Are there some examples of situations you would like to describe?
        - Who have brought up the issue during the medical consultation? (You or your patients)
        - If it was your patients, how has the topic been introduced into the discussion (entry door)?
        - How easily have you discussed climate change and health with your patient?
        - How did your patient react to this conversation (examples of positive or negative reactions)?
    b. **If no:** What are the reasons that could explain why this topic has not yet been addressed during medical encounters (either by the GP or patients)?
        - How comfortable would you be addressing the topic with your patients?

8. ***People with low socio-economic status have been cited several times as being a group at greater risk of facing the health impacts of climate change. However, in interviews, these people are also often perceived as being disinterested, which apparently makes it difficult to discuss climate change and health with them. What do you think about this?***

9. ***In your opinion, what sources of information do patients use to learn about the effects of climate change on health?***
    a. **If cite GPs** – Why?
    b. **If does not cite GPs**: You did not mention GPs among the potential sources of information for your patients:
        - In your opinion, why did patients not consider their GP as such?
        - To what extent do you consider yourself a potential source of information about climate change and health for your patients?

10. ***In your opinion, is it relevant to address the impacts of climate change on health in primary care consultations? (If yes or no, why?)***

11. ***How should GPs communicate with their patients about the health effects of climate change?***
    a. What communication strategies or approaches have you used or would you use to address the topic?
    b. In your opinion, what influence could this type of communication have on the therapeutic relationship you have with your patients?

12. ***How would you define GPs' role in tackling climate change and its health consequences?***
    a. Why do you think that GPs have, or do not have a role to play in this?
    b. In your opinion, why would GPs be better positioned than specialists to discuss this topic with their patients?
    c. What impact could GPs have on patients' health and well-being if they fully assumed these roles?

13. ***In one of the interviews conducted with doctors, advocacy was cited as one of the roles they could play in addressing the health effects of climate change. What do you think about this potential role for general practitioners?***

Barriers and facilitators

14. ***How do you perceive the overall relevance of climate change?***
    a. Have you, or your relatives, ever experienced any climate change-related event? Would you feel comfortable talking about it?
    b. How do you personally feel regarding all recent climate change manifestations and communication about it?
    c. How easily do you address this topic with people around you (relatives, friends or colleagues)? (is it a concern, a distant political issue, a non-topic)
        - Which factors do you think prevent these conversations?
        - Which factors do you think facilitate these conversations?

15. ***Based on the grief curve, where do you stand in relation to climate change (eco-anxiety)?***
    a. How may this influence the communication you might have with your patients about the impacts of climate change?

16. ***What other elements would be a barrier for you to have this discussion with your patients?***

17. ***What is your opinion on the general position taken by peers, professional associations etc. regarding the role that general practitioners could play in addressing the impacts of climate change on health?***

18. ***What factors enable communication with your patients about the effects of climate change on health?***

Needed resources and changes

19. ***What useful changes and resources would be needed to reduce these barriers?***
    a. What changes would be necessary to address the lack of time cited as one of the major barrier to communication about climate and health?

Guide thématique (FR)

Parler aux patients de l'impact du changement climatique sur la santé dans les soins primaires : une étude qualitative menée auprès de médecins généralistes belges

Patients

Informations générale

1. ***Quel âge avez-vous?***
2. ***Dans quel secteur travaillez-vous ?***
3. ***Dans quel type de pratique travaille votre médecin généraliste ? (solo, groupe, maison médicale)***
4. ***Combien de temps dure une consultation chez votre médecin généraliste ?***
5. ***Depuis combien de temps consultez-vous votre médecin généraliste actuel(le) ?***
    a. Quel âge a votre MG approximativement ?
6. ***Pourquoi avez-vous choisi de consulter dans ce type de pratique en particulier ?***
    a. Comment compareriez-vous la pratique dans laquelle vous consultez actuellement à un autre type de pratique que vous avez pu avoir dans le passé ?
7. ***Quelle place occupent la prévention et la promotion à la santé dans la pratique médicale de votre médecin généraliste ?***

Perception des patients quant aux impacts du changement climatique sur la santé humaine

8. ***Comment pensez-vous que le changement climatique affecte (ou pourrait affecter) votre santé et celle de vos proches ?***
    a. Dans quelle mesure vous considérez-vous et vos proches plus à risque de faire face aux impacts du changement climatique sur la santé ?
    b. Selon vous, quelles personnes sont (ou seront) les plus touchées par les impacts du changement climatique sur la santé ?

Sources d'information des patients sur le changement climatique et la santé

9. ***Comment évalueriez-vous votre niveau d'informations au sujet du changement climatique et de ses effets sur la santé ?***
    a. Pour vous informer davantage sur le sujet, où trouveriez-vous l'information ?
    b. Parmi les sources que vous avez mentionnées, quelle serait votre principale source d'information ? Pourquoi ?
    c. **(Si les MG font partie des sources d'information citées)** Pour quelles raisons considérez-vous votre médecin généraliste comme une source d'information sur le sujet ?
        - Comment évalueriez-vous votre niveau de confiance en votre MG comme source d'information quant à au changement climatique et à la santé ?
    d. **(Si les MG ne font pas partie des sources d'information citées)** Pourquoi ne pas avoir pensé spontanément à votre médecin généraliste comme source potentielle d'information au sujet des impacts du changement climatique sur la santé ?

La perception des patients sur la communication au sujet du changement climatique et de ses conséquences sur la santé en consultation de médecine générale

10. ***Avez-ous déjà discuté des effets du changement climatique sur la santé avec votre médecin généraliste ?***
    a. **(Si oui)** : Qui d'entre vous a soulevé la question lors de la consultation ?
        - Dans ce cas, quelle « porte d'entrée » votre médecin généraliste ou vous-même avez utilisée pour aborder ce sujet en consultation ?
        - Comment avez-vous vécu cette discussion avec votre médecin généraliste ?
        - Avec quelle aisance votre médecin généraliste a-t-il eu cette conversation avec vous ?
    b. **(Si non) :** Selon vous, quelles pourraient être les raisons expliquant que le sujet n'a jamais été abordé au cours d'une consultation médicale (par votre médecin généraliste et par vous-même) ?
        - Avec quelle aisance aborderiez-vous ce sujet avec votre médecin généraliste ?

11. ***Selon vous, de quelle manière les médecins généralistes devraient-ils communiquer avec leurs patients au sujet des effets du changement climatique sur la santé ?***
    a. Quelles approches de communication votre médecin généraliste utilise-t-il, ou attendriez-vous de sa part, pour aborder ce sujet ?

12. ***Sachant que les effets du changement climatique sur la santé se font déjà sentir en Europe, et en Belgique également, quel type d'informations aimeriez-vous obtenir de votre médecin généraliste à ce sujet ?*** (Pourquoi)

Perceptions des patients sur le rôle des médecins généralistes dans la lutte contre le changement climatique et ses conséquences sur la santé

13. ***Comment définiriez-vous le rôle des médecins généralistes face au changement climatique et à ses conséquences sur la santé ?***
    a. Pourquoi pensez-vous que les MG ont ou n'ont pas de rôle à jouer ?
    b. Selon vous, pour quelle raisons les MG seraient-ils mieux placés que les spécialistes pour aborder ce sujet avec leurs patients ?

14. ***Dans l'une des interviews menées auprès des médecins, le plaidoyer a été cité parmi les rôles qu'ils pourraient jouer face aux effets du changement climatique sur la santé. Que pensez-vous de ce rôle potentiellement attribué aux généralistes ?***

Obstacles et facilitateurs

15. ***Comment percevez-vous la pertinence globale du changement climatique ?***
    a. Avez-vous, ou vos proches, déjà vécu un événement associé au changement climatique ? Seriez-vous à l'aise d'en parler ? (si non, pas d'insistance)
    b. Que ressente-vous (émotions) face à toutes les manifestations récentes du changement climatique et face à la communication qui est faite à ce sujet ?
    c. Avec quelle facilité abordez-vous le sujet du changement climatique avec votre entourage (parents, amis ou collègues) ? (S'agit-il d'une préoccupation, d'une question politique lointaine, d'un non-sujet)
        - Selon vous, quels sont les facteurs qui empêchent ces conversations, ou du moins qui les rendent difficiles ?
        - Selon vous, quels sont les facteurs qui rendent ce sujet plus facile à aborder avec votre entourage ?

16. ***Sur base de la courbe représentant les étapes du changement, où vous situez-vous par rapport au changement climatique auquel nous faisons face (éco-anxiété) ?***

a. Selon vous, comment cela influence-t-il la communication que vous pourriez avoir avec vos patients sur l'impact du changement climatique ?

17. ***Quels sont les éléments qui pourraient vous empêcher ou vous décourager d'avoir cette conversation avec un médecin généraliste ?***

18. ***Quels sont les éléments qui pourraient vous encourager à aborder l'impact du changement climatiques sur la santé avec un médecin généraliste ?***

Ressources et changements nécessaires

19. ***Quels changements et ressources seraient nécessaires pour réduire ces obstacles ?***
    a. Au niveau des patients (à votre niveau)?
    b. Au niveau des médecins généralistes ?

A. Médecins généralistes (MG)

Informations relatives à la pratique du médecin généraliste

1. ***Quel âge avez-vous ?***
2. ***Depuis combien de temps travaillez-vous en tant que médecin généraliste ?***
3. ***Dans quel type de pratique travaillez-vous ?***
    a. Combien de patients voyez-vous par jour ?
    b. Combien de temps dure une consultation ?
    c. Quel est la place de la prévention et de la promotion à la santé dans votre pratique médicale quotidienne ?
4. ***Quelles sont les raisons qui vous ont amené(e) à choisir ce genre de pratique ?***
5. ***Avez-vous déjà fait l'expérience d'autres types de pratique dans le passé ?***
    a. Quelles sont les différences principales que vous avez pu objectiver entre ces différents types de pratique (ombre de patients vus par jour ? temps de consultation ? place de la prévention et de la promotion à la santé) ?

Relation entre la pratique du médecin généraliste et le changement climatique.

6. ***Comment pensez-vous que le changement climatique affecte la santé de vos patients ?***
    a. Y a-t-il des exemples que vous aimeriez partager au sujet de patients dont la santé a déjà été affectée par le changement climatique ?
    b. Selon vous, quelles sont les personnes les plus touchées par les impacts du changement climatique sur la santé ?

7. ***Des questions liées au changement climatique et à la santé ont-elles déjà été abordées dans votre pratique ?***
    a. **Si oui** : Y a-t-il des exemples que vous aimeriez partager ?
        - Qui a soulevé la question lors de la consultation médicale ? (Vous ou votre patient)
        - De quelle manière le sujet a-t-il été introduit dans la conversation (porte d'entrée ?)
        - Avec quelle aisance avez-vous abordé le sujet avec votre patient ?
        - Comment votre patient a-t-il réagi à cette conversation (exemples de réactions positives ou négatives) ?

b. **Si non** : Selon vous, quelles sont les raisons qui pourraient expliquer le fait que ce sujet n'ait pas encore surgit en consultation (tant de la part du MG que des patients) ?
    - Avec quelle aisance borderiez-vous le sujet avec vos patients ?

8. ***Les personnes vivant en milieu socio-économique faible ont été citées plusieurs fois comme étant un groupe plus à risque de faire face à l'impact du changement climatique sur la santé. Pourtant, dans les interviews, ces personnes sont aussi souvent perçues comme étant désintéressée, ce qui rend apparemment la discussion au sujet du changement climatique et de la santé difficile à aborder avec elles. Qu'en pensez-vous ?***

9. ***Selon vous, quelles sont les sources d'informations qu'utilisent les patients pour se renseigner au sujet des effets du changements climatique sur la santé ?***
    a. Si cite les MG – Pourquoi ?
    b. **Si ne cite pas les MG** : Vous n'avez pas cité les MG parmi les sources d'informations potentielles de vos patients :
        - Selon vous, pour quelles raisons les patients ne considéraient-ils pas leur MG comme telle ?
        - A quel point vous considérez-vous comme une source potentielle d'information au sujet du climat et de la santé pour vous patients ?

10. ***Selon vous, aborder l'impact du changement climatique en consultation de médecine générale est-il pertinent ? (Si oui ou non, pourquoi ?)***

11. ***Comment les médecins généralistes devraient-ils communiquer avec leurs patients sur les effets du changement climatique sur la santé ?***
    a. Quelles stratégies ou approches de communication avez-vous utilisées ou utiliseriez-vous pour aborder le sujet ?
    b. Selon vous, quelle influence ce genre de communication pourrait-elle avoir sur la relation thérapeutique que vous avez avec vos patients ?

12. ***Comment définiriez-vous le rôle des médecins généralistes face au changement climatique et à ses conséquences sur la santé ?***
    a. Pourquoi pensez-vous que les MG ont ou n'ont pas de rôle à jouer ?
    b. Selon vous, pour quelle raisons les MG seraient-ils mieux placés que les spécialistes pour aborder ce sujet avec leurs patients ?
    c. Selon vous, quel impact les MG pourraient-ils avoir face aux effets du changement climatique sur la santé, s'ils assumaient pleinement ces rôles ?

13. ***Dans l'une des interviews menées auprès des médecins, le plaidoyer a été cité parmi les rôles qu'ils pourraient jouer face aux effets du changement climatique sur la santé. Que pensez-vous de ce rôle potentiellement attribué aux généralistes ?***

Obstacles et facilitateurs

14. ***Comment percevez-vous la pertinence globale du changement climatique ?***
    a. Avez-vous déjà vous-même, ou l'un de vos proches, vécu un événement associé au changement climatique ? (Seriez-vous à l'aise d'en parler ?)
    b. Que ressentez-vous personnellement face à toutes les manifestations récentes du changement climatique et de la communication qui est en fait ?
    c. Parlez-vous du changement climatique avec votre entourage (parents, amis…) ?
        - Avec quelle facilité abordez-vous ce sujet avec eux ? (S'agit-il d'une préoccupation, d'une question politique lointaine, d'un non-sujet)

- Selon vous, quels sont les facteurs qui empêchent ou facilitent ces conversations ?

15. ***Sur base de la courbe représentant les étapes du changement, où vous situez-vous par rapport au changement climatique auquel nous faisons face (éco-anxiété) ?***
    a. Selon vous, comment cela influence-t-il la communication que vous pourriez avoir avec vos patients sur l'impact du changement climatique ?

16. ***Quels sont les autres obstacles qui vous empêchent de parler des effets du changement climatique sur la santé avec vos patients ? (Expérience personnelle)***

17. ***Que pensez-vous de la position générale prise par les pairs, associations professionnelles, universités, ordre des médecins, syndicats, INAMI etc… par rapport aux rôles que pourraient jouer les médecins généralistes face à l'impact du changement climatique sur la santé ?***

18. ***Quels sont les éléments qui facilitent la communication sur les effets du changement climatique sur la santé auprès de vos patients ? (Expérience personnelle)***

Ressources et changements nécessaires

19. ***De quels changements, ressources utiles auriez-vous besoin pour réduire ces obstacles ?***
    a. Selon vous, quels seraient les changements nécessaires pour remédier au manque de temps cité comme l'une des contraintes majeures à la communication au sujet du climat et de la santé ?