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Family Medicine and Community Health

Multimorbidity and clinical reasoning through the eyes of GPs: a qualitative study

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ABSTRACT

Objectives Despite the high prevalence of patients suffering from multimorbidity, the clinical reasoning processes involved during the longitudinal management are still sparse.

This study aimed to investigate what are the different characteristics of the clinical reasoning process clinicians use with patients suffering from multimorbidity, and to what extent this clinical reasoning differs from diagnostic reasoning.

Design Given the exploratory nature of this study and the difficulty general practitioners (GPs) have in expressing their reasoning, a qualitative methodology was therefore, chosen. The Clinical reasoning Model described by Charlin *et al* was used as a framework to describe the multifaceted processes of the clinical reasoning.

Setting Semistructured interviews were conducted with nine GPs working in an ambulatory setting in June to September 2018, in Geneva, Switzerland.

Participants Participants were GPs who came from public hospital or private practice. The interviews were transcribed verbatim and a thematic analysis was conducted.

Results The results highlighted how some cognitive processes seem to be more specific to the management reasoning.

Thus, the main goal is not to reach a diagnosis, but rather to consider several possibilities in order to maintain a balance between the evidence-based care options, patient's priorities and maintaining quality of life. The initial representation of the current problem seems to be more related to the importance of establishing links between the different pre-existing diseases, identifying opportunities for actions and trying to integrate the new elements from the patient's context, rather than identifying the signs and symptoms that can lead to generating new clinical hypotheses. The multiplicity of options to resolve problems is often perceived as difficult by GPs. Furthermore, longitudinal management does not allow them to achieve a final resolution of problems and that requires continuous review and an ongoing prioritisation process.

Conclusion This study contributes to a better understanding of the clinical reasoning processes of GPs in the longitudinal management of patients suffering from multimorbidity. Through a practical and accessible model, this qualitative study offers new perspectives for identifying the components of management reasoning. These results open the path to new research projects.

Key points

Question: What is this research focused on exploring, validating or solving?

- This study aims to depict the different clinical reasoning processes at play during longitudinal care of patients suffering from multimorbidity and to better understand how they articulate with one another.

Finding: What conclusions did this research draw through design, method and analysis?

- The need to take into account the multiplicity of problems and not to deal with them separately leads general practitioners to use different clinical reasoning processes that interact with each other in specific ways; this contributes to making these processes more complex.

Meaning: What is the value, meaning and impact of your research? Is there any follow-up study based on this research?

- Our results underline the relevance of our research topic and reinforce our conviction of the importance of making these clinical reasoning processes more explicit. A new qualitative research project based on video sequences of clinical encounters, followed by semistructured interviews, and using the video stimulated recall interview method, will soon be carried out.

INTRODUCTION

Multimorbidity is defined by WHO as a co-occurrence of ≥2 diseases.[1] According to recent studies, this set of population represents more than half of the population aged 65 years and above in Denmark[2] and represents 52.1% of patients consulting their general practitioner (GP) in Switzerland compared with 52.9% in England.[3 4] This prevalence increases with age and socioeconomic deprivation.[1 3 4] Furthermore, the risk of mortality increases by 25% when having three or four chronic diseases compared with patients who have none.[5]

Clinical reasoning is usually defined as the thought and decision-making processes

with the aim to reach a problem resolution.[6] Several decades of research in cognitive psychology have contributed to a better understanding of these processes which have been described in numerous reviews.[7–13] There is a consensus in the literature about the concept of an hybrid process of clinical reasoning playing simultaneously and involving an immediate, intuitive approach and a more conscious, analytical approach.[14–20] Oftentimes in medicine, 'reaching a correct diagnosis' is seen as the goal of clinical problem solving[21]; nevertheless, taking care of patients suffering from multimorbidity and providing a longitudinal follow-up requires that clinical reasoning continues beyond their diagnosis and also includes choices regarding treatment, follow- up visits, further testing and the allocation of limited resources.[22]

Cook *et al* recently named this kind of reasoning processes 'management reasoning'.[23] These authors stated that 'management reasoning' is more complex than 'diagnostic reasoning'.[24] Nevertheless, the clinical reasoning involved during the management of chronic care remains poorly described in the literature. It is therefore necessary to untangle the different processes at play and to better understand how they articulate with one another during longitudinal care of patients suffering from multimorbidity.[22]

METHODOLOGY

Design

This study is part of a series of research projects[22 25 26] aiming to explore clinicians' clinical reasoning in chronic care. Given the exploratory nature of this study, a qualitative approach was conducted.[27] One-to-one semi-structured interviews were chosen to investigate GPs' experiences regarding their clinical reasoning process with regard to patients suffering from multimorbidity in an ambulatory setting.

Setting

A qualitative study was carried out with GPs practising in ambulatory setting in Geneva, Switzerland. The GPs came from public hospital or private practice. The interviews took place at the GP's practice and were conducted in French.

Sampling

A purposeful sample was recruited for this exploratory study. Inclusion criteria were as follow: (1) having attended a workshop on clinical reasoning supervision organised by the Primary Care Institute (IuMFE) or by the Unit of Development and Research in Medical Education (UDREM) at the Faculty of Medicine of the University of Geneva (Switzerland) within the last 5 years; (2) having at least 10 years of clinical experience. Potential participants having a role of supervisor at the hospital (Service of Primary care medicine at the University Hospital of Geneva) or in private practice in Geneva have been contacted by email by two members of our research team. The first criterion ensured that we would only recruit people who had previous knowledge and a common language to describe their reasoning during the interviews. Given the complexity of managing patients suffering from multimorbidity and of describing one's clinical reasoning when confronted with this management, we decided to include only experienced clinicians (second criterion). GPs without an outpatient clinical practice and those who do not follow multimorbid patients were excluded.

To ensure the quality of the research and a satisfactory content validity, the number of interviews must allow to achieve data saturation. In order to measure the saturation of our qualitative data, we used Drisko's perspective[28] which defines saturation in terms of 'the comprehensiveness of both the data collection and analysis'. In the same way, Hennink *et al*[29] offer to combine elements of both inductive thematic saturation model, which relates to the emergence of new codes or themes, and data saturation model, which is linked to the degree to which new data repeat what was expressed in previous data, identifying by this way the point at which 'no additional issues are identified and the codebook begins to stabilise'.[30]

Data collection

Data were collected through one-to-one semistructured interviews. An interview guide (online supplemental file 1) was developed by our research team based on questions to investigate GPs' experiences regarding their clinical reasoning process with regard to patients suffering from multimorbidity in an ambulatory setting (eg, 'Can you describe your clinical reasoning when managing these patients suffering from multimorbidity whose diagnosis you already know'). Interviews were conducted from June to September 2018, in Geneva by CL and M-CA with a semistructured interview guide (online supplemental file 1).

Analysis

Analysis was conducted by three members of the research team (CR, JS and M-CA), including a GP, a psychologist and a medical education specialist with expertise in the fields of cognition and clinical reasoning. The diversity of their training and expertise gave more depth and allowed the GPs to bounce back on different ideas which enriched both the interaction and the analysis of our data.

The analysis of our audiorecorded transcribed verbatims used a theory-driven variant of immersion–crystallisation.[31 32] This methodology posits that inductive (data-driven) and deductive (theory-driven) processes should be brought together to enrich interpretation. First, the researchers immersed themselves in data to determine emerging themes. Second, they returned to the scientific literature to enrich their coding. More specifically, they compared emerging themes with the clinical reasoning model described by Charlin *et al* which is a comprehensive model which captures the complexity of clinical reasoning processes (figure 1).[7]

This model uses the notion of categorisation for the purpose of action, rather than the term 'making a diagnosis'. This model also introduces the notion that clinical reasoning goes beyond diagnosis and it offers valuable perspectives on

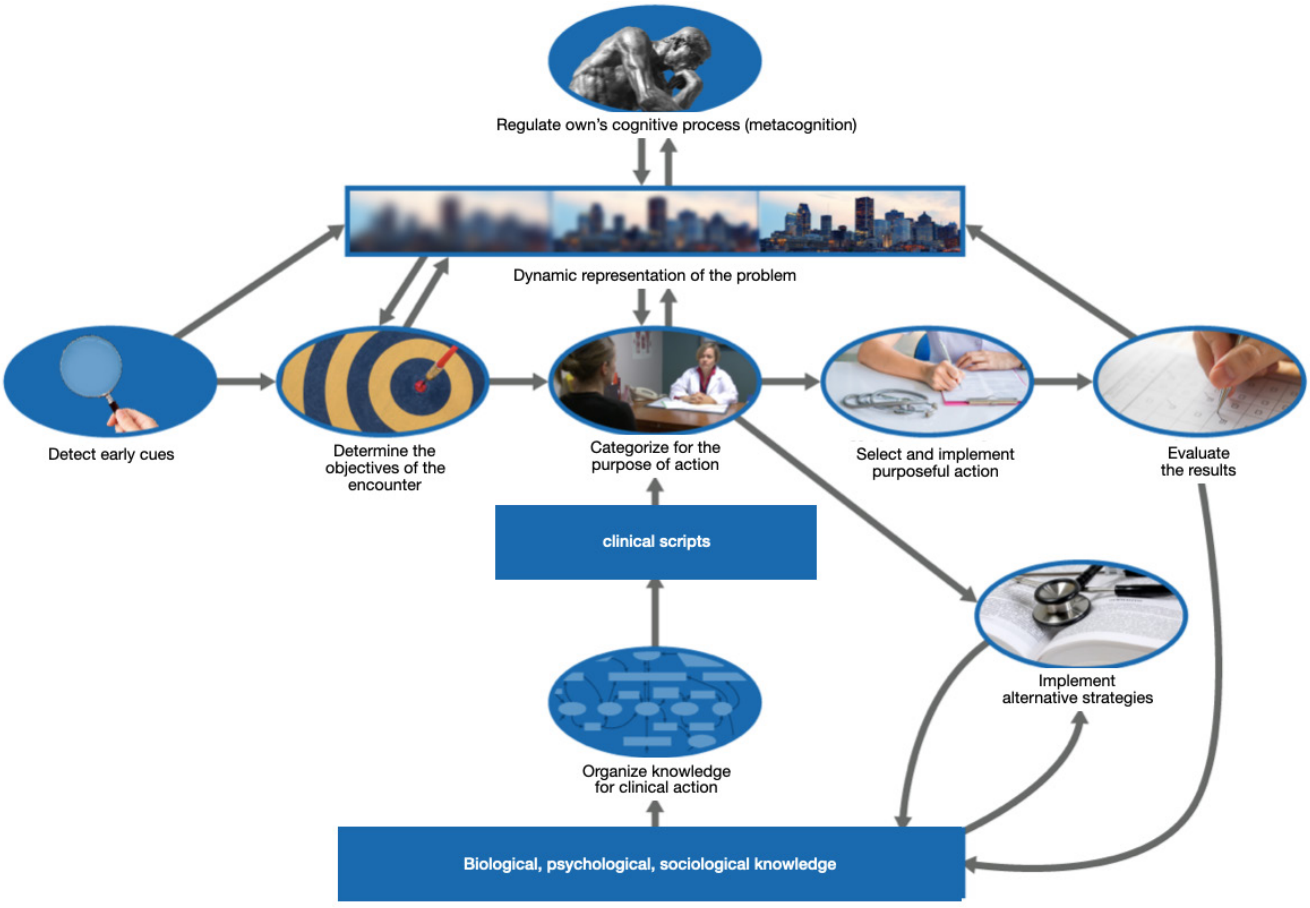

Figure 1 Simplified diagram of clinical reasoning processes adapted from Charlin *et al*[7] and extracted from the MOOC in French entitled Supervision du raisonnement clinique en contexte de soins (clinical reasoning supervision in clinical setting (coursera and EDUlib). MOOC, massive online open courses.

the notions of dynamic and ongoing representation of the problem and regulation (meta-cognition).

RESULTS

Participants

Nine GPs (n=5 females; n=4 males; mean age 46.5 years old) were interviewed. The mean duration of interviews was 24.08 min with an SD of 6.79. All the characteristics of participants are presented in table 1.

How do GPs picture the problem and what are their clinical reasoning goals?

The specific decisions of management are part of an overall objective of care. Many of the GPs emphasised the importance of defining an overall goal with their patient before starting

Table 1 Demographic details of participants

Participant	Age (years)	Sex	Years of clinical experience	Private practice or working in a hospital/ institution
P1	39	Female	12	Public hospital
P2	39	Male	12	Private practice
P3	39	Male	11	Private practice
P4	44	Female	18	50% private to 50% public
P5	44	Male	12	Public hospital
P6	48	Female	20	Public hospital
P7	48	Male	20	Public hospital
P8	49	Female	25	50%–50%
P9	54	Female	29	Private practice

management. GPs then strived to maintain a course of action that corresponds to the overall objective. They nevertheless expressed the difficulty of reaching this global objective given the vulnerability of their patients who would often require different care according to the recommendations.

Maintaining the overall goal

Rather than solely focusing on diagnosis, GPs emphasised the importance of taking the patient as a whole, to integrate their specific needs to tailor their care. Some emphasised the importance of preserving the patient's quality of life.

> Their current quality of life makes it so that they do not want to have another aggressive treatment plan, and that for them, the aim is to remain at home (…). (GP2)

Achieving stability in the patient's condition was a goal for most of the GPs. The GPs then have to identify which elements are at risk to disrupt the balance and how they can maintain stability.

> As they are fragile (…) we will expect non-pharmaceutical treatment and pharmaceutical treatments to go back to a stable balance which for them is a good enough preservation of their quality of life (…). (GP3)

> So, we are indeed permanently trying to manage the instabilities. (GP2)

Consider the patients' vulnerability and make links between illnesses

GPs considered their patients as more frail or vulnerable with a higher risk of complications and hospitalisations. Making links in term of risks and causality is an integrative process that is part of the management reasoning process.

> I always foresee multimorbidity as risky, the risk of complications, risk of death, an increased risk of hospitalisation. So, (…) I want to reduce these risks. So, there are things that we will have to do in the management of those risks. (GP1)

> The first aim is to try to make links between the illnesses, in terms of risk and causality. (…) To determine the global risk rather than the risk linked to each individual case. (GP9)

Throughout the consultation, which cognitive processes are at play?

Initial representation of the problem: understanding and identifying opportunities

Our results confirm the crucial role of the initial representation of the problem for the early stages of management reasoning. The initial representation of the current problem seems to be more related to the importance of establishing links between the different pre-existing diseases, identifying opportunities for actions and trying to integrate the new elements from the patient's context, rather than identifying the signs and symptoms that can lead to a new generation of hypotheses.

> The reasoning has more to do with not missing certain elements, not missing out on opportunities to move things forwards. (GP7)

Prioritising: reasoning through different possibilities of care

The multiplicity of these options to resolve problems was often perceived as difficult by GPs. To overcome this complexity, they use an ongoing prioritisation process. Before the encounter, GPs review the previous objectives, which were planned out. Then, during the longitudinal care, GPs periodically redefine and negotiate the priorities centred on the patient's wishes or current needs, but also on their considerations and current concerns based on their own knowledge and expertise of treatments and diseases.

> Well, it is much more complex, therefore there are more options available. (GP4)

Articulation: making links between illnesses

The process of linking chronic illnesses seems to be common among GPs during longitudinal reasoning processes. Some GPs specified that when trying to resolve problems separately, this may lead to impaired reasoning management.

> And not to be in mono focus, not to take the illnesses as one being independent from the others, but to see how they interact altogether. (GP1)

> It is like a Sudoku with multiple slots (…). There are always a few points of entry and then you have to integrate them all, to find the number to put in the middle of the grid. When you are dealing with multimorbidity, you suddenly have 6 - 8 slots around. (GP3)

Anticipation: foreseeing the problems ahead

Anticipation of future care is part of a context of predicting the patient's future state according to the prognosis of his or her disease. It also makes it possible to anticipate future complications and plan relief actions. The anticipation of future care by the GP seems to be organised during the consultation in parallel with ongoing care.

> We are not in a + b = c when it comes to multimorbidity. So, I am already trying to have other possible images of my patients in x amount of time, depending on who they are, which illnesses they have, and which tools could be useful to them. (GP1)

> It is a sort of juggling with a few balls which you have to learn to do (…) maybe it is the red one that today should be put in the forefront (…) then there is the blue one that falls, well we will pick it up tomorrow. (…) It is not important that the blue one falls, but you must not forget it the next day. (GP3)

Final representation of the problem: never ending, always changing

Longitudinal management does not allow GPs to obtain a stable final resolution of problems because usually,

chronic diseases never end. GPs described changing and evolving patients and situations that require continuous review of different problems and they adapt care according to these changes.

> Nothing can be done and dusted; it is never ending with a multimorbid patient. Because everything interacts with one another and then it can morph into something else (…). We are in something that is continuously transforming, and therefore a patient continuously transforming as well, in all aspects of their lives but also of their illnesses. Therefore, we have to always adapt to their changing state. (GP1)

How do GPs involve the patients, the specialists and other healthcare professionals in their management reasoning?

The patient's medical problems and life context must be well known by the GPs to allow them to target appropriate actions. Therefore, patients' integration is considered as an absolute requirement. GPs share their reasoning with patients in order to encourage them to take an active role in the management of their diseases.

> To make him the actor of their own management of their illnesses as they are the ones carrying them not me. Of course, I will support them along the way, but I will let them carry their illnesses, so that they can manage their lives as they wish to. (GP3)

> (….). Unless there is something else which seems to take precedent and seems more important. And then, we will negotiate, we will share our agendas. (GP6)

Some GPs expressed their difficulty to manage the whole patient's problem and their need to have other healthcare professional's or specialists input for the care of their patient.

> (…). We have different specificities and we can reason differently, but we have the patient at the centre of it all. (GP1)

> I also make contact with the different health professionals by trying to explore how they see the situation before sharing my own perspective on the situation. (GP1)

Few GPs described sharing clinical reasoning with specialists, but rather integrate the specialist's suggestions into their own reasoning and then discuss these options with the patient to decide on an action plan.

> (…) I think it is also to learn how others do which allows us to enrich our toolbox. (GP5)

> These cases need other healthcare professionals to intervene, before and after haven see the patient to have a common ground and a common understanding on the different interventions. (GP6)

GPs also mention the importance of their experience and expertise when it comes to making care decisions, and the challenge this represents while working with interns or young professionals; specifically, when it seems more relevant to slow down, and to take the time to see the evolution of the clinical situation or the one of the patient's perspective.

> Well, it seems to me that the big challenge, (…), when we see the interns coming here who have never done ambulatory care, is that they want to solve all the patient 's problems in one day . (…) With these patients (…), the time is rather over months and years, but I don't know if that is taught (GP 9)

How do GPs describe their cognitive processes?

GPs were sometimes able to explicit specific steps of their clinical reasoning. For example, to deal with the complexity of clinical situations, they highlighted their process of linking different problems and the relevance of these links. They emphasised the importance of their reflective approach and described both processes of clinical reasoning: intuitive and analytical processes. The analytical approach is highlighted by the cognitive process of 'reassessing' or 'rethinking' their reasoning. These 'reflexive loops' were also described by GPs to avoid reasoning failures and to reduce uncertainty.

> It is a reasoning which is more complex each time, and it requires a constant re-evaluation of the problems. We are way more analytical, even if intuitive is evidently present, but there are verification steps which are much richer. (GP2)

> At certain times, when you have a doubt regarding a symptom which does not change etc., what is key is to have a moment where you stop and think about it for a minute, and think about it, because the risk if you do not stop and think is to mix up certain things is to stay up on the surface and not fully in depth with the problems. (GP8)

> You take the time to re-read, to look it over again, to tell yourself, I have not missed out anything, what I can achieve for this illness, can have this consequence, can it interact with this other illness (…). I do that when I have a doubt, (…) or when there is something I am not getting. (GP4)

DISCUSSION

Principal findings

Our results allowed us to highlight some specificities of the management reasoning. First of all, due to the chronicity of diseases, the main goal of management reasoning is not to achieve a diagnosis, but rather to consider several possibilities in order to maintain a balance between the evidence-based care options, patient's priorities and maintaining quality of life. This is in line with the current recommendations on multimorbidity which propose estimating disease prognosis, as well as quality of life to adapt the care.[33 34]

Throughout the encounter, although GPs generally describe similar steps as in a mono-pathology focused encounter, different cognitive processes are reported during longitudinal management. Prioritisation of problems is carried out repeatedly in all steps of the encounter due to the multiplicity of problems. Similarly, problems are not managed separately from one another other, but GPs articulate them, whether it is for the initial assessment or for implementing an action. Continuously, the GPs imagine the patient's conditions in the future and anticipate possible complications.

Strengths and weaknesses of the study

This study has several limitations: first, the sample could appear to be small. Nevertheless, we obtained both inductive thematic saturation, and data saturation; this allowed us to ensure that no new data would change our results. Second, given the difficulty GPs have in expressing their reasoning, especially without prior training in clinical reasoning, one of the inclusion criteria was that GPs should have a prior knowledge of clinical reasoning. This can, therefore, limit the generalisation of our results as they may differ from the standard GP population. Finally, the model highlighted by Charlin *et al* is still probably insufficient to depict all the facets of this complex reasoning. However, it offers a valuable approach to enrich our understanding and depict the different elements of clinical reasoning involved during longitudinal management of patients suffering from multimorbidity.

A strength of this study is that it identified the different components of the GP's clinical reasoning which may help to illustrate further these complex cognitive processes. The methodology used in this study allowed GPs to describe their implicit clinical reasoning processes. For example, many GPs used metaphors to describe their reasoning processes. Therefore, by exploring these metaphors this could add breadth to the current literature on the topic of clinical reasoning.

Comparison with existing literature

This is a real challenge to develop a management reasoning by making compromises between the needs of patients, the multiple diseases' evolution, and the different guidelines.[35–38] In this regard, Sinnott *et al* suggest the concept of 'satisficing': physicians take such an approach by providing care that they consider to be satisfactory and sufficient for a given patient in his or her particular context.[39]

Reducing the risk of complication was another aim described by our participants. Indeed, multimorbidity is associated with higher incidence of functional decline and mortality and with increased rates of treatment burden, health centres use and hospitalisation.[5 40–44] Current recommendations suggest to assess the frailty of these patients, with clinical scores based on physical functional criteria or patient self-assessment, but there is currently no score to assess accurately the risk of complications for patients suffering from multimorbidity.[45] The lack of risk stratification might increase uncertainty in decision making and thus influence the reasoning of GPs.[46]

The model described by Charlin *et al*[7] allows us to identify and describe some specificities of the management reasoning, but also to disentangle the key differences between 'diagnostic reasoning' and 'management reasoning'.[47] As a matter of fact, selected aspects of this model seem to weigh in more during the longitudinal care, whereas others take on a different meaning (online supplemental files 2 and 3).

In this model, the step described as 'detecting early cues' is highly relevant given the GP's rich knowledge of the patient's past medical history. By rethinking the situation or reviewing the information, the physician can elaborate a rich initial representation of their patients and the situation at the beginning of the encounter. Therefore, any new clues would be more easily noticed, making the initial representation of the problem more thorough.

'Determining the objective of the encounter' seems to be a more complex step during longitudinal management, due to the multiplicity of the objectives that could be selected by GPs. As described in the literature, the establishment of priorities remains a central issue of management of patients suffering of multimorbidity, due to the limited time available for the medical encounter.[48] Our results are consistent with the literature highlighting the importance of considering and including patient request.[34 45 49] GPs have to articulate identified problems with one another in order to deal with them and implement appropriate actions.[45 50]

GPs use their clinical scripts: these scripts in the context of multimorbidity could potentially differ, as they seem to be more complex, due to conjointly managing these diseases and how these diseases interact with one another, evolve and change during the longitudinal care of the patients. As Higgs described: 'Clinical reasoning and practice knowledge are mutually developmental; each relies on the other, gives meaning to the other in the achievement of practice and is the source of generation and development of other'.[51]

Patients' perspectives are mostly considered during this particular time, as confirmed by several studies.[52 53] The conflict between respecting patients' choices and the responsibility to provide medical care based on recommendations remains a major challenge in long-term management.[54]

Then, the notion of 'categorise for the purpose of action' focuses on the type of problem previously selected which may range from investigating a new symptom to managing chronic uncontrolled problems. According to our results, both the intuitive and analytical reasoning processes are involved in management reasoning. Further studies are needed to clarify the reasoning processes involved.

The step relative to 'select a purposeful action' represents a critical moment for GPs for many reasons. First, because of the different options they have to choose and prioritise. Second, because of the negotiation with

their patients, and also because they have to integrate the recommendations of other professionals if such recommendation is deemed useful. It is interesting to note that while some GPs adhered to the notion of 'no single best choice',[49] many others were uncomfortable with the actions chosen. GPs are often unaware of their underlying clinical reasoning and as a result, tend to underestimate their choices.[55 56]

The use of 'alternative strategies' in management reasoning seems to be more frequent than in diagnostic reasoning. Due to the complexity and uncertainty of diseases, the use of external resources (medical literature, advices from colleagues, etc) seems to be more common.

But, the notion of alternatives strategies takes on a different meaning than in the model described by Charlin *et al*. First, as shown in our results, longitudinal management implies considering the patient in a network of care providers and not as a dyadic doctor-patient relationship. Therefore, the shared management of the care between health professionals and caregivers is often necessary and promoted by GPs.

Nevertheless, even if endorsed, this interprofessional collaboration and shared clinical reasoning face many potential barriers.[26] GPs perceive themselves as being in a fortunate position to take on the role of coordinators of care,[26 57] but, despite or because of this perspective, seeking advice from a specialist or a pharmacist may be rarely considered, as GPs want, at first, to optimise the patient's condition.[57] In addition, GPs sometimes consider that specialists tend to be diseased focused and might not adopt a more patient-centred approach.[58 59]

During collaborating between GPs and specialists, the barriers also seem to be to agree on the appropriate or 'best' strategy to implement right away, whether to take action, or on the contrary, to decide to 'wait and see'.

Second, for the same reasons and possibly because of the variability of the problems encountered (eg, social, biomedical, economic), GPs sometimes have to mobilise their internal resource by analysing those problems from different perspectives (psychosocial, anatomical, aetiological).[60 61]

The preferences, values and requests of the patient influence the GP's reasoning at each step of the reflection process. But, although GPs and patients discuss and prioritise together, our results did not highlight any obvious collaborative reasoning. Therefore, collaborative reasoning could be involved depending on the patient's level of 'health literacy' and his or her capacity to engage in 'self-management'.[62] According to Lussier and Richard, the more chronic and benign the disease is, the more the GP will be a care facilitator to help the patient manage his or her illnesses, whereas if the disease is acute and severe, the GP will assume the role of expert guide and take the lead.[63] During longitudinal management, although, patient's illnesses are chronic, illnesses are probably severe due to their multiplicity and their interactions making the role of the physician and the patient uncertain and probably variable.

The notion of 'dynamic representation of the problem' takes a different meaning during the longitudinal follow-up. Indeed, illnesses never end, and therefore, the dynamic representation continuously evolves with new information. According to our results, GPs have to make frequent adjustments to improve the problem representation by correcting some elements or by updating them, depending on the information available. They try to obtain a clear picture of the problem at a given time, but this image never achieves a complete stability. Metacognition refers to an individual's knowledge concerning his or her own cognitive processes.[64] These ongoing adjustments reinforce the need to enrich and develop their metacognition.

Implications for clinical and academic practice

The model used in this study allowed to highlight that the GPs keep their patients in mind throughout the management, therefore, reinforcing how the implication of the patient is essential to the management.[7] However, this study showed that when it comes to longitudinal management the model of clinical reasoning processes should go one step further. By including the complexities of longitudinal management as well as explore how collaboration with other healthcare professionals and specialists might impact the cognitive processes of GPs.

Further research should focus on exploring the implications of collaborative reasoning as well as how that might affect GP's longitudinal clinical reasoning processes and management.

Our results also bring forth another major challenge: that is the need for GPs to be more aware of their clinical reasoning processes in order to make sense of their approach and value it. This will help them to feel more at ease in their decision making, in their collaborations and in their relationship with the patients and their relatives, thus improving the quality of care. This need is also related to teaching: the ability to supervise in the clinical setting requires an understanding of the clinical reasoning strategies that are used,[65] in order to explicit them to the students, and prevent potential clinical reasoning difficulties.[66 67]

CONCLUSION

The clinical reasoning processes used by GPs to resolve clinical situations remains at the very heart of medical practice. This qualitative study highlights some cognitive processes which seem specific to the management reasoning and offers a novel approach to explore some aspects of this reasoning, through a practical and accessible model. Thus, rather than solely focusing on diagnosis, GPs emphasised the importance during these ongoing clinical reasoning processes to take the patient as a whole, in order to integrate their specific needs and adapt them to their care.

More research is, therefore, needed to have a more in depth understanding of the various elements and challenges of management reasoning.

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