

Integrating Multidisciplinary Results to Produce New Knowledge About the Physician–Patient Relationship: A Methodology Applied to the INTERMEDE Project

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Abstract

The INTERMEDE Project brought together a number of research teams to study the interaction between a patient and their general practitioner, and how this can produce social inequalities in health. The ultimate objective of the project was to formalize a core of common findings by integrating qualitative and quantitative results. The methodology chosen for the integration was inspired by the Delphi participatory method. It involves several rounds of questions and feedback in writing between all members of project teams, in order to compare contradictory opinions and identify key concepts arising from the project. This interdisciplinary research has provided a more nuanced understanding of the mechanisms underlying physician–patient interaction by revealing the convergences of the various disciplinary approaches.

Keywords

interdisciplinary, mixed methods research, participatory method, physician–patient interaction, social inequalities in health

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Context

Despite the fact that primary care is widely available to the whole population and is generally consistent across social classes, social inequalities in health (SIH) are nevertheless observed in disease treatment and follow-up in France. Studies have shown that the quality of cardiovascular risk factor management varies according to the patient's social context. A study carried out in hypertensive patients, for example, shows that the quality of therapeutic control on antihypertensive medication was less than 30% in skilled workers but exceeded 40% in higher level executives (De Gaudemaris et al., 2002). Even where there are no disparities in the diagnosis or treatment of hypertension (HTN), when we look at the effectiveness of treatment and quality of care, a social gradient starts to emerge between the lowest and highest socioprofessional categories (Fourriaud et al., 1984; Lang et al., 1998). Inequalities of care appear even in the case of recommendations made on primary prevention; a study on communication relating to primary risk factors has shown that discussions on nutritional prevention and the benefits of physical exercise were more likely to take place with high-income patients than patients with a lower income (Taira, Safran, Seto, Rogers, & Tarlov, 1997). The organization of the primary care system, along with the general practitioner (GP) and the relationship they build with their patient at consultation and the communication that takes place between them, play a fundamental role in creating the discrepancies observed.

The quality of the relationship between a patient and their physician is a key factor in the quality of care provided and the effectiveness of the health system. It affects the resulting overall health of the patient, their therapeutic compliance, their satisfaction and confidence in their physician, and their path through the health care system (Kinnersley, Stott, Peters, & Harvey, 1999; Krupat, Bell, Kravitz, Thom, & Azari, 2001; Willems, De Maesschalck, Deveugele, Derese, & De Maeseneer, 2005). The impact of this relationship is likely to be particularly crucial in the treatment and follow-up care of chronic illnesses, as well as at the prevention stage, which involves long-term health behaviors that form part of the patient's lifestyle. Furthermore, in recent years, the interaction between patients and physicians has increased impact on quality of care; the French health system has gradually evolved from a paternalistic model to a patient-centered model, with patients wishing to be well-informed about and increasingly in control of their health. Negotiation and cooperation between physician and patient have therefore become important elements of the consultation (Kinnersley et al., 1999; Krupat et al., 2001). The physician's diagnostic or therapeutic decisions, although partly based on their own experience and practice irrespective of the patient they are treating, will also depend on the richness of their discussion and interaction with the patient and the patient's participation in the decision-making process; the quality of the information exchanged during consultation and how well this information is understood is therefore a key element of this interaction (Cooper et al., 2003; Gordon, Street, Kelly, Soucek, & Wray, 2005; Gordon, Street, Sharf, & Soucek, 2006). At the prevention stage, care mainly depends on what patients are willing to reveal about their behaviors, such as their diet and levels of exercise, and their symptoms, whether expressed in a formal way or not, and on whether the physician, in turn, makes clear recommendations and an accurate assessment of their patient's health behaviors.

Nevertheless, the following factors deserve exploration: the exact content of a general practice consultation, its role in preventive care, the complex relationships that develop between patients and physicians, and the impact that the patient's social context has on this consultation.

The overall objective of INTERMEDE, an interdisciplinary project, is to explore the role of the health system, and more specifically the relationship between a GP and their patient, in the production of SIH. The project is based on the hypothesis that physician-patient interaction influences the quality and equity of preventive care provided in general practice. Better

understanding of the underlying mechanisms of this encounter would enable us to identify actions to be taken in an outpatient context to ensure both high-quality preventive care and equality of care to all patients. The complexity of the physician–patient interaction and its implications on health care system required an interdisciplinary methodology based on “mirrored” questioning of both physician and patient about their experience of the encounter, after the consultation. For this reason, the INTERMEDE project involved a number of different research teams from various disciplines (epidemiology, sociology, economics, textometry, and linguistics), who have collaborated throughout two sequential qualitative and quantitative phases.

The purpose of this interdisciplinary collaboration was threefold. First, each of the disciplinary teams involved intended to publish work within their own specialist field. Second, their respective approaches were intended to complement each other; the seminars and various meetings enabled each team to share their hypotheses, discuss and develop their findings, and enhance their own work with the results of other disciplinary teams. Each team employed their own analytical framework to characterize physician–patient interaction and then to explore the relationship between physician–patient interaction and the patient’s social context. Finally, after the first two objectives had been met and each disciplinary team was to publish in their own field of research (Genolini, Roca, Rolland, & Membrado, 2011; Kelly-Irving et al., 2008; Kelly-Irving et al., 2009; Kelly-Irving et al., 2011; Membrado, 2014; Schieber et al., 2011; Schieber et al., 2012; Tanguy, Fabre, Ho-Dac, & Rebeyrolle, 2011), the third key challenge of the INTERMEDE project remained: to integrate the results produced by each discipline in order to produce a core of knowledge and shared hypotheses that will be central to the formulation of public health recommendations.

The integration of results produced by projects using mixed methods research (MMR) remains a major challenge (Clarke, 2009). The use of this type of research goes beyond the “simple” collection of both qualitative and quantitative data, aiming to actually integrate, relate, or “mix” the data at various stages of a project (Yin, 2006). Much interdisciplinary work, despite collaborating over a single body of data, often results in separate analyses (Guével & Pommier, 2012; Johnson, Onwuegbuzie, & Turner, 2007). Yin identifies five specific stages at which integration can be performed: formulation of the hypothesis, unit of analysis, samples, study variables, and analytic strategies: “The more that a single study integrates mixed methods across these five procedures, the more that mixed methods research, as opposed to multiple studies, is taking place” (Yin, 2006, p. 42). However, the integration of the results produced by various disciplines is a key stage during which an understanding of MMR methods is crucial (Creswell & Plano Clark, 2007). The development and publication of new tools is specific to each field of research, as is the case in research on primary care and on SIH where MMR is still not widely used (Creswell, Fetters, & Ivankova, 2004; Guével & Pommier, 2012; Stewart, Makwarimba, Barnfather, Letourneau, & Neufeld, 2008).

Objectives

The primary objective of this study is to suggest forward a methodology for integrating results in projects using MMR into primary care and SIH and to integrate the results produced by the various disciplinary teams involved in the INTERMEDE project.

This consists of identifying the elements of patient–GP interaction that might contribute to the occurrence of SIH within the consultation. The project then aims to make suggestions for research on general practice that might produce valuable recommendations for consultations.

Method

Description of the INTERMEDE Project

The INTERMEDE project originated from three seminars where interdisciplinary exploration and discussion took place in 2005. It is based on a sequential exploratory design, in which each phase was conducted independently, on a different sample of patients and physicians (Figure 1; Kelly-Irving et al., 2009):

- The objective of the first, qualitative phase was to test the feasibility of collecting sociological data at different times on the general practice consultation, to provide hypotheses to be tested in the quantitative phase, and to produce original results on the physician–patient interactions observed.
- A second, quantitative phase using a mirrored questionnaire tool was developed partly from the literature and partly from hypotheses generated during preparatory seminars. The objective of the quantitative phase was to analyze levels of physician–patient agreement on the content of the consultation and to find out whether discrepancies in their relative perspectives are related to the social distance between them. The results of the quantitative analyses have been used to suggest new paths for analysis.

Physicians were recruited from three French regions (Ile de France, Midi-Pyrénées, and Pays de la Loire), on a volunteer basis via GP networks: the Toulouse Department for general medicine and the French society for general medicine. They did not receive any financial compensation for their participation.

The patient eligibility criteria for both phases were being aged between 18 and 80 years old inclusive; being regularly followed by the observed physician and not being a first-time patient of that physician; not being pregnant or having given birth in the past 6 months; not consulting the physician in an emergency; and having given informed consent to take part in the whole study.

Qualitative Phase

The qualitative phase was conducted in the medical offices of 11 volunteer GPs, across three regions of France, between March and September 2006.

The qualitative data were collected by means of in situ observation of consultations and semistructured postconsultation interviews with patients and physicians separately. An interview was requested if the patient was overweight or if the subject of nutrition had been specifically raised during the consultation. The purpose of the interview was to find out more about the patient's life and health, and to discuss the consultation from the patient's perspective: expectations, information received, whether or not the patient agreed with the physician's advice, any compliance issues, and the degree of satisfaction or dissatisfaction with the consultation and, more generally, with any follow-up care. The interview with the physician was intended to record biographical information (age, year of doctoral qualification, year commenced practice, volume of consultations, etc.), and information on practices and professional values, as well as discussing how the consultation proceeded from their point of view. The interviews were conducted by two sociologists and an anthropologist.

In total, 249 consultations were observed, and 48 were followed-up with interviews with the patient and physician separately, all of which have been transcribed. Of the 48 patients selected for postconsultation interview, 27 were women, the median age was 60 years, and 40 had a body mass index ≥ 25 kg/m².

The first analyses of the body of data were conducted by two teams of sociologists from an interactionist and pragmatic perspective (Glaser & Strauss, 1967), who shared all their initial

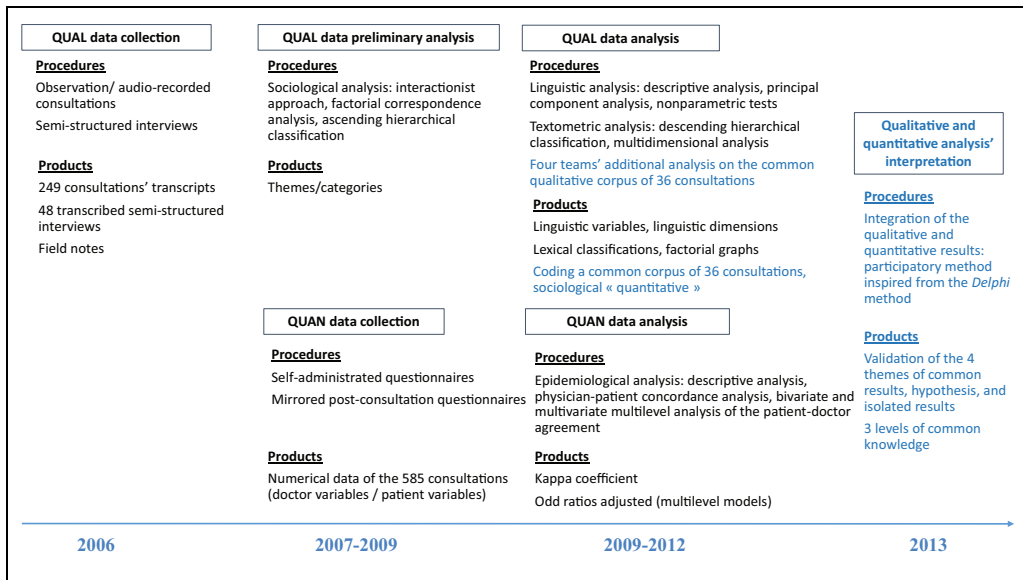


Figure 1. Diagram of the INTERMEDE Project.

results and hypotheses on the project. Two teams joined the project and added their specialist analyses of the qualitative data. Given the crucial role of language and interaction in medical practice, the characteristics of the exchange between the physician and patient were explored by a team of linguists using linguistics methods and from an applied linguistics perspective. The verbal interactions during a medical consultation can also be assessed using a lexicometric approach, and so the conversations, considered as textual data, were statistically analyzed by a psychologist specializing in textometry (Marchand, 2007).

Each disciplinary team worked on the qualitative data, using their own methods and analytical frameworks, both individually and in group sessions, in order to limit the effect of subjectivity on the interpretation of the data. No specific data analysis design was established a priori with the aim of allowing researchers to develop theories and design analysis when they had worked on their data. However, certain common themes of analysis were identified. Research focused on the elements of the patient’s social context that might influence the relationship between physicians and patients, and on how the consultation may be negotiated between the two parties. Other dimensions were explored based on the literature, such as the role of the “doctor” effect in physician–patient interaction and the influence of perceived shared identity on the quality of communication (Street, O’Malley, Cooper, & Haidet, 2008).

Additional analysis of the qualitative data was performed by the four teams on the basis of a “common corpus” of 36 consultations that were recoded based on common variables defined by the researchers (Figure 1). These variables resulted from the sociologists’ initial work and hypotheses, and their inclusion in the corpus enabled teams to conduct further analysis by integrating the work of other researchers.

Quantitative Phase

The quantitative phase was conducted based on a cross-sectional study design, between September and October 2007, in the same three regions of France.

The data were collected via a series of questionnaires completed by physicians and their patients. An initial questionnaire given to all physicians and all patients explored, respectively, physician characteristics (practices and lifestyle) and patient characteristics (attitudes, beliefs, and social context). A mirrored questionnaire given immediately postconsultation asked the physician and patient the same questions independently and from their respective perspectives. It explored the content of the consultation, the assessment of the patient's perceived health, and the explanations and advice given in relation to the management of cardiovascular risk factors.

The final sample consisted of 27 volunteer physicians recruited in the three regions and 585 patients eligible for the study, and therefore 585 patient–physician “pairs.”

Analysis of the quantitative data was conducted by a team of epidemiologists. Their objective was to explore levels of agreement and disagreement between patients and physicians in relation to various aspects of the consultation and to assess the impact of the patient's social context on any disagreement observed. Analysis of the physician–patient agreement in no way prejudged what was actually done or said during the consultation. No statements made during a consultation were taken as a reference, nor judged “correct” or “incorrect,” taking into consideration that each party was conveying their own view of the consultation. Furthermore, the dimensions analyzed through the qualitative data were also examined in the quantitative phase. Particularly close attention was given to the effects of any cultural proximity perceived by either party on physician–patient interaction, and inversely those of any perceived social distance. Intra- and interphysician variation in practice was another common thread running through the various analyses carried out. Statistical analyses consisted primarily of multilevel, multivariate modeling taking the hierarchical structure of the sample into account (Goldstein, 1995).

Description of the Method Used for Integration of the Qualitative and Quantitative Results

In the case of sequential study designs, the integration of methods typically takes place at the analysis stage of the qualitative phase, when researchers use the data to create a data collection tool, or in the final phase when the results are discussed and brought together in a complementary manner (Creswell et al., 2004). Therefore, the design in itself could represent a strategy for the integration of analyses. However, the objective of the INTERMEDE project was to formalize a core of results shared by all the teams, produced by the various perspectives of each discipline. This therefore involved developing an innovative methodology for integrating results in MMR, which might prove useful for research into primary care and SIH in particular, and for studies using a sequential design with different samples (Creswell & Plano Clark, 2007).

The method we developed for integrating our results was inspired by the participatory method called the Delphi method (Dalkey & Helmer-Hirschberg, 1962), a dialog-based process designed to offer the benefits of the sharing and exchange of opinions, with individuals questioned able to find out the opinions of others (Slocum, 2006). The most frequent objective of this type of method is to reach a consensus. In our process, the objective was more to identify the key concepts arising from the project. Our intention was to be able to obtain an overall core of conclusions and observations produced by the project that could be used to formulate concrete recommendations for general practice and to generate hypotheses for future work in primary care research.

This method consisted of several successive phases.

Round 1

An initial interdisciplinary integration questionnaire was developed and was completed by everyone who had worked on the data in each of the five teams ($n = 12$). This questionnaire

explored the research questions and the results produced by the work of each team, and their agreement or disagreement was recorded as either “Yes/No/Don’t know” for each result obtained. A space for comments was provided for each section.

Round 2

The responses from the first questionnaire were analyzed based on a “rough” categorization of convergent, divergent, and autonomous/isolated ideas. This initial categorization of the results was followed by the drafting of a summary document identifying a set of common conclusions and hypotheses. This document was sent to the same members of each team ($n = 12$), requesting their “agreement” or “disagreement” with each conclusion in turn, and their written suggestions. An analysis of their replies was used to produce a further document identifying the key areas of conclusions.

Face-to-Face Meeting

The third stage of this participatory process took the form of a plenary meeting with all teams present. At this meeting, all points of convergence and divergence between the teams were discussed, along with isolated evidence observed by individual teams only. The purpose was to validate the key themes of results produced by the interdisciplinary teams.

Drafting of the Final Document

The final stage of the method we developed consisted of the drafting and validation of the final document. Common conclusions were presented using a scale of three knowledge levels, based on the convergence of observations:

- Knowledge Level 1: When one observation was made by at least two disciplinary teams
- Knowledge Level 2: When one observation was made by one team but gave rise to a hypothetical explanation or understanding for another discipline
- Knowledge Level 3: When one hypothesis or observation was made only by one team

Submission of the Results to a Panel of General Practitioners

The results were submitted to a first panel of GPs at a research seminar on general practice.

Results

After the first two rounds and the face-to-face meeting, four key themes of results were identified. This core of common findings is summarized in Tables 1 to 4.

Theme 1: Influence of Physician–Patient Interaction on Preventive Care (Table 1)

Preventive care plays a varying role in consultations, depending largely on the issue being discussed. Nutrition and physical exercise were perceived by a number of patients as being unrelated to medical care and were a source of misunderstanding between patient and physician. (Knowledge Level 1)

Table 1. Theme 1: Influence of Physician–Patient Interaction on Preventive Care.

		Qualitative phase: Results and hypothesis			Quantitative phase: Results and hypothesis	
Level of knowledge	Common knowledge	Sociological analyses	Psychosocial analyses	Linguistic analyses	Lexicometric analyses	Epidemiological analyses
Level 1	Preventive care plays a varying role in consultations, depending largely on the issue being discussed. Nutrition and physical exercise were perceived by a number of patients as being unrelated to medical care and were a source of misunderstanding between patient and physician.		The themes of nutrition and physical exercise appeared to be dealt as “ordinary conversation,” that is, nonmedical discussion, and neither the patient nor physician deemed them an integral part of the consultation.		The theme of diet was often raised by the patient but was rarely a key element of the encounter for the physician.	Physicians and patients often disagreed on nutrition and physical activity, conversely of management of hypertension, alcohol and smoking consumption where patient–physician agreement was good.
Level 1	The issue of weight is rarely mentioned, and often even avoided or underestimated, and it is the source of disagreement between patients and physicians.	The question of excess weight was rarely raised and often even avoided in consultation. Overweight is underestimated by both physicians and patients, more frequently for male patients.	Comprehensive hypothesis: The theme of diet was discussed in a register associated with heterogeneous knowledge and multiple realities, unlike the subject of hypertension management where the physician’s expertise seemed to dominate.			Physicians and patients disagreed on weight loss counseling.

(continued)

Table 1. (continued)

Level of knowledge	Qualitative phase: Results and hypothesis				Quantitative phase: Results and hypothesis
	Common knowledge	Sociological analyses	Psychosocial analyses	Linguistic analyses	
Level 1	Variation can be observed between physicians in terms of their preventative care practices. These vary according to the characteristics of the physicians, such as their lifestyle, levels of exercise, and their health status, irrespective of the characteristics of the patients. Their respective role in physician–patient interaction should be taken into account.	Comprehensive hypothesis: Physician's own characteristics (age, sex), lifestyle, attitudes, health status, regular habits, relationship with weight, training, and any feeling of having limited power to achieve anything in this area might influence diet counseling during the consultation.	A variability on delivering diet counseling is observed between doctors.		Patient–doctor disagreement on exercise's counseling depended on the physician's practice.
			Comprehensive hypothesis: Physician's own characteristics (age, sex), lifestyle, and relationship with weight might influence diet counseling during the consultation.		Explicative hypothesis: Physicians' sociodemographic characteristics, their health status, and their medical training might influence disagreements observed during the consultation.

Note. GP = general practitioner.

The epidemiologists observed good levels of agreement between physicians and patients with regard to management of hypertension, alcohol consumption, and smoking. Conversely, discussions on nutrition and physical activity led to higher levels of disagreement. Statistical analysis of the transcribed consultations revealed that the subject of diet was often raised by the patient but was rarely a key element for the physician. According to the sociologists, these subjects were considered to be part of an “ordinary conversation,” that is, nonmedical discussion, and neither the patient nor physician deemed them an integral part of the consultation. The theme of diet was discussed in a register associated with heterogeneous knowledge and multiple realities, unlike the subject of hypertension management where the physician’s expertise seemed to dominate.

“The issue of weight is rarely mentioned, and often even avoided or *underestimated*, and it is the source of disagreement between patients and physicians” (Knowledge Level 1). According to sociological and epidemiological analyses, the question of excess weight was rarely raised and often even avoided in consultation, being *underestimated* by both physicians and patients. Sociologists observed minimization (trivialization) of the risks of obesity in the absence of any related disease, especially in male patients. It was therefore a source of disagreement between physicians and patients in the quantitative phase, with physicians claiming they had made recommendations, while patients claimed not to have heard them.

Variation can be observed between physicians in terms of their preventive care practices. These vary according to the characteristics of the physicians, such as their lifestyle, levels of exercise, and their own state of health, irrespective of the characteristics of the patients. Their respective role in physician–patient interaction should be taken into account. (Knowledge Level 1)

Wide interphysician variation in relation to lifestyle and diet recommendations was observed by the sociologists, the lexicometry expert, and the epidemiologists, both in terms of the frequency with which the topic was raised and the volumes of communication. Some physicians, for example, made no recommendations about excess weight or alcohol consumption even when a patient was expecting them to do so or was obviously overweight. The impact of the physician’s own characteristics (age, sex), lifestyle, attitudes, health status, regular habits, relationship with weight, training, and any feeling of having limited power to achieve anything in this area: These are all factors that might contribute to this variation, independently of patient characteristics, and would merit closer analysis.

Theme 2: The Effect of Physician and Patient Gender on Their Interaction (Table 2)

“The gender of the physician and patient noticeably influences how the consultation proceeds and the topics that are raised” (Knowledge Level 1). According to the analyses carried out by the linguists and sociologists, female physicians are characterized by the extent to which they listen to their patient and conduct in-depth discussion on the patient’s life, asking more questions and letting their patients do more talking. Their consultations also last longer. Likewise, the linguists observed that the average length of discussions were longer with female patients, with the patient doing more of the talking and the physician doing more listening. Conversely, the sociologists observed that the volume of communication comprising explanation of the disease was larger for male physicians. These results echo the observation made by epidemiologists that there was better physician–patient agreement on certain advice given at consultation when the physician was a woman. In addition, lexicometric analyses revealed the use of different vocabularies according to the patient: medication, disturbed sleep, and diet for the men; administrative management and medical and social follow-up (children) for the women.

Table 2. Theme 2: The Effect of Physician and Patient Gender on Their Interaction.

Level of knowledge	Qualitative phase: Results and hypothesis				Quantitative phase: Results and hypothesis	
	Common knowledge	Sociological analyses	Psychosocial analyses	Linguistic analyses		Lexicometric analyses
Level 1	The gender of physician and patient noticeably influences how the consultation proceeds and the topics that are raised.	The volume of communication comprising explanation of the disease was larger for male physician. Conversely listening to the patients and in-depth discussion on the patient's life were more frequently observed for female physicians.		Female physicians are characterized by the extent to which they listen to their patient and conduct in-depth discussion on the patient's life, asking more questions and letting their patients do more talking. Their consultations also last longer.	Different vocabularies were used according to the patient.	Explicative hypothesis: the female physician's style of communication might explain in part the better agreement on advice given observed when the GP is a woman.
Level 2	Gender concordance/discordance influences levels of agreement/disagreement between physicians and patients.	Comprehensive hypothesis: Female physicians may develop "behavior that creates a connection" with their patients in forms that go beyond the specific contractual commitment of the medical relationship.				Gender concordance influences patient-physician agreement on advice given during the consultation.

Note. GP = general practitioner.

“Gender concordance/discordance influences levels of agreement/disagreement between physicians and patients” (Knowledge Level 2). The team of epidemiologists observed better agreement between female physicians and their female patients regarding advice given on nutrition and physical activity. The sociologists’ hypothesis is that female physicians may develop *alliance* with their patients in forms that go beyond the specific contractual commitment of the medical relationship. Conversely, misunderstandings arose between male physicians and their female patients around the question of excess weight. The influence of gender on interactions, which can either distance the physician and patient or bring them closer, represents a dimension that should be considered in research on the quality of the physician–patient relationship and secondary access to care.

Theme 3: Characterization of Physician–Patient Interaction

Each discipline characterized physician–patient interaction according to their own analytical framework. The resulting observations were echoed to a greater or lesser extent by the other disciplines (Table 3).

“Physician–patient interaction can be characterized by various ‘modes of behaving together,’ involving levels of cooperation and chosen or imposed delegation of power” (Knowledge Level 1). Both teams of sociologists described “modes of behaving together,” with on one side patients being more or less autonomous or submissive, and on the other, the physician acting anywhere from detached to paternalistic. These behaviors reflect shared efforts made by physicians and patients in terms of pragmatism, cooperation, or conversely instrumentation, and distancing of knowledge.

“Two types of physician–patient interaction emerge, depending on the attitude of the physician: whether their attitude prioritizes the technical (clinical) or focuses more on the relational, involving listening and dialog” (Knowledge Level 1). The lexicometry expert and both teams of sociologists identified two types of attitude in physicians: one prioritizing the technical, labeled a “paradigmatic attitude,” and the other focusing on the relational and dialog, the “syntagmatic attitude.” Physicians tended toward one or the other depending their particular ethos and attitudes toward medicine and the care-giving relationship.

The physician–patient relationship can be characterized by the satisfaction/dissatisfaction of the physician and the patient. Better satisfaction levels are observed for physicians when consultations focus more on the technical, and on topics where scientific consensus prevails. The physician’s dissatisfaction with the discussion of topics such as nutrition may contribute to the misunderstandings that arise between physicians and patients. (Knowledge Level 1)

The lexicometry expert observed that the physician is much more satisfied with patient interaction when he adopts a paradigmatic attitude, and is far less satisfied when adopting a syntagmatic attitude centered on the patient and on their relationship. The compromise lies somewhere in the middle. According to the sociologists, physicians are satisfied when discussing questions where their expert knowledge prevails, and when they feel that they can do something with their patient, especially those with whom they cooperate and negotiate. Dissatisfaction may arise when patients remind them of their powerlessness, or when patients “do not understand anything” or fail to listen and “do as they please.” Patients also tend to be more satisfied with conversations in which they are informed about their state of health and are “listened to” when recounting their symptoms, than those focused on the “relational.” It is likely, according to one of the sociologists, that this satisfaction/dissatisfaction varies according the nature of the presenting complaint. Psychiatric issues, imperceptible to the physician or disruptive to the flow of

Table 3. Theme 3: Characterization of Physician–Patient Interaction.

Level of knowledge	Common knowledge	Qualitative phase: Results and hypothesis			Quantitative phase: Results and hypothesis	
		Sociological analyses	Psychosocial analyses	Linguistic analyses	Lexicometric analyses	Epidemiological analyses
Level I	Physician–patient interaction can be characterized by various “modes of behaving together,” involving levels of cooperation and chosen or imposed delegation of power.	“Modes of behaving together” were described, with on one side patients being more or less autonomous or submissive, and, on the other, the physician acting anywhere from detached to paternalistic.				
Level I	Two types of physician–patient interaction emerge, depending on the attitude of the physician: whether their attitude prioritizes the technical (clinical) or focuses more on the relational, involving listening and dialog.	Two types of physician’s practices were described: one prioritizing the technical (clinic), and the other focusing on the relational, listening and dialog.			Two types of physicians’ attitude were described: one prioritizing the technical, labeled a “paradigmatic attitude,” and the other focusing on the relational and dialog, the “syntagmatic attitude.”	
Level I	The physician–patient relationship can be characterized by the satisfaction/dissatisfaction of the physician and the patient. Better satisfaction levels are observed for physicians when consultations focus more on the technical and on topics where scientific consensus prevails. The physician’s dissatisfaction with the nutrition may contribute to the misunderstandings that arise between physicians and patients.	Physician’s satisfaction/dissatisfaction might depend on the cooperation and negotiation with the patient, and conversely on their feeling of powerlessness. Comprehensive hypothesis: Doctor’s satisfaction might be greater when the scientific expertise is dominating. Patients also tend to be more satisfied with conversations in which they are informed about their state of health and are “listened to” when recounting their symptoms, than those focused on the “relational.”	Comprehensive hypothesis: The feeling of satisfaction/dissatisfaction might depend on topics raised with the patient during the consultation.		Explicative hypothesis: Nutrition’s counseling or evaluation of the patient’s perceived health status may lead to more dissatisfaction felt by the physician, which could explain in part disagreement observed on these topics.	

(continued)

Table 3. (continued)

		Qualitative phase: Results and hypothesis			Quantitative phase: Results and hypothesis	
Level of knowledge	Common knowledge	Sociological analyses	Psychosocial analyses	Linguistic analyses	Lexicometric analyses	Epidemiological analyses
Level 1	The flow of physician–patient interaction follows varying paths, with some consultations proceeding in a prototypical manner while others seem more “rambling.”	While some consultations seemed to proceed in a prototypical manner, following an almost ritual path, others seemed more “rambling,” depending on the patients’ requests or the opportunities of the consultation.		Two types of consultations were observed: long consultations, in which the patient did most of the talking and the interlocutors used a shared vocabulary, and short consultations, in which the physician did more of the talking and a specific vocabulary was used by each party.		
Level 1	Prevention does not have a formalized place in consultation.		The topic of prevention is not given any dedicated or formalized time, or even necessarily any identifiable time by doctors themselves.			A small place is dedicated to prevention.
Level 3	In terms of language used, discussions between physicians and patients have various linguistic features; two types of interaction can be observed based on levels of subjectivity or conversely nuance/modality introduced into the discourse by the physician and patient.			A set of linguistic features that enable us to define the exchanges between physician and patient in terms of language used.		
Level 2		Comprehensive hypothesis: With some patients a relationship of trust focused on the purpose of the medical care needs to be established; while for others patients, a relationship of trust has already been established with the physician, and the interaction takes place in a more familiar register with reciprocity of exchanges.		Two styles of physician–patient interaction were distinguished, based on the level of subjectivity introduced by the interlocutors.		Explicative hypothesis: The degree of subjectivity introduced or not in the encounter might explain in part patient–doctor disagreement, especially on abstract dimensions of the consultation.

the consultation, may be experienced as levels of dissatisfaction. The dissatisfaction felt by the physician dependent on topics raised with the patient may also represent a possible explanation for the physician–patient disagreement observed by the epidemiologists in relation to abstract dimensions of the consultation, such as nutrition or the perceived health of the patient.

“The flow of physician–patient interaction follows varying paths, with some consultations proceeding in a prototypical manner while others seem more ‘rambling’” (Knowledge Level 1). Physician–patient interaction could also be described based on the structural content of the consultation. Sociological analyses revealed that while some consultations seemed to proceed in a prototypical manner, following an almost ritual path, others seemed more “rambling,” depending on the patients’ requests or the opportunities of the consultation. The linguists observed two types of consultations in particular: long consultations, in which the patient did most of the talking and the interlocutors used a shared vocabulary, and short consultations, in which the physician did more of the talking and a specific vocabulary was used by each party.

“Prevention does not have a formalized place in consultation” (Knowledge Level 1). According to the sociologists, the topic of prevention is not given any dedicated or formalized time, or even necessarily any identifiable time by the doctor himself/herself. In the quantitative phase, the epidemiologists observed a small place dedicated to prevention, with a small percentage of the advice given across all consultations relating to nutrition, physical activity, and weight loss.

“In terms of language used, discussions between physicians and patients have various linguistic features; two types of interaction can be observed based on levels of subjectivity or conversely ‘modalization’ introduced into the discourse by the physician and patient” (Knowledge Levels 2 and 3). The linguists also described physician–patient interaction based on a set of linguistic features that enable us to define the exchanges between physician and patient in terms of language used: length of the conversation, percentages spoken by each interlocutor, frequency of questions, sharing of vocabulary, and length of each phase of the consultation (Knowledge Level 3). Two styles of physician–patient interaction in particular were distinguished, based on the level of subjectivity introduced by the interlocutors: this varies between exchanges in which remarks are “modalized” or nuanced and, conversely, consultations marked by subjectivity in which a certain degree of affectivity or value judgment, sometimes in a more familiar register, were more often used. This result resonated with the epidemiologists as a possible explanation for the more numerous disagreements observed in relation to abstract dimensions of the consultation (advice and assessment of perceived health; Knowledge Level 2). It also enlightened the sociologists on the frameworks of confidence observed between patients and physicians: With some patients a relationship of trust focused on the purpose of the medical care needs to be established; with others patients, where a relationship of trust has already been established with the physician, interaction takes place in a more familiar register with reciprocity of exchanges (Knowledge Level 2).

Theme 4: Elements of Physician–Patient Interaction That May Contribute to the Occurrence of Social Inequalities of Health Based on a Social Gradient

The fourth theme enabled each discipline to formulate hypotheses on the elements of physician–patient interaction that might lead to SIH during the consultation based on a social gradient (Knowledge Levels 1 and 2; Table 4).

“The patient’s social context determines the extent of their autonomy or delegation of decision making to the physician” (Knowledge Level 1). Sociologists observed a correlation between a patient’s autonomy or their delegation of decision making to the physician and their position on the social gradient. Higher level executives tended to have good health resources and autonomy within the physician–patient relationship, while patients from less advantaged

Table 4. Theme 4: Elements of Physician–Patient Interaction That May Contribute to the Occurrence of Social Inequalities of Health Based on a Social Gradient.

		Qualitative phase: Results and hypothesis				Quantitative phase: Results and hypothesis	
Level of knowledge	Common knowledge	Sociological analyses	Psychosocial analyses	Linguistic analyses	Lexicometric analyses	Epidemiological analyses	
Level I	The patient's social context determines the extent of their autonomy or delegation of decision making to the physician.	Higher level executives tended to have good health resources and autonomy within the physician–patient relationship, while less advantaged groups with fewer resources tended to delegate decisions back toward the physician.					Shared decision making depends on the social context of the patient.
Level I	“Modes of behaving together” depend on the patient's social context, and some modes of interaction can therefore put patients at more of a disadvantage.	“Modes of behaving together” varied according to types of physician's practices on the one hand and according to the social context and resources of the patient on the other hand.					
Level I	Physician and patient satisfaction levels are higher in situations of chosen delegation, that is, when patients show proof of both reflexivity and submission to medical authority. Conversely, physicians appear more often dissatisfied with more autonomous patients.	Physicians were more satisfied with situations of “chosen delegation,” when patients showed evidence of both reflexivity and submission to medical authority. Conversely, physicians appeared more dissatisfied with patients who possessed good health resources and took care of their bodies.					Physicians were more in a “relational” style of practice with situation of delegation, and autonomy, and they were more on a technical practice with situations of “chosen delegation.” The last one was perceived as more satisfying for the doctor.

(continued)

Table 4. (continued)

Qualitative phase: Results and hypothesis					Quantitative phase: Results and hypothesis	
Level of knowledge	Common knowledge	Sociological analyses	Psychosocial analyses	Linguistic analyses	Lexicometric analyses	Epidemiological analyses
		<p>Comprehensive hypothesis: Trust might dominate with situations of "chosen delegation," as an expressed recognition of knowledge and skills of the physician.</p> <p>Comprehensive hypothesis: the level of abstractions and the manipulation of registers that do not reflect the same rationalities may also create distance between physician and patient.</p>				
Level 2	<p>The vocabulary used by the physician tends to be more subjective and marked by familiarity, evaluation and value judgments with elderly patients of a lower socioeconomic class. This could explain various misunderstandings between physicians and patients about more abstract dimensions of the consultation.</p>			<p>The vocabulary used tended to be more subjective, marked by familiarity, evaluation and value judgments with elderly patients, or with patients from a lower socioeconomic class. The discourse was more modalized and more nuanced with autonomous patients, who had resources in terms of medical knowledge and a good relationship with their body.</p>	<p>The use of pain vocabulary was rare and seemed to be specific to patients with good resources.</p>	<p>Explicative hypothesis: the degree of subjectivity or conversely modalization introduced in the interaction might be one explanation for the gradients observed in physician-patient disagreements, particularly on abstract dimensions of the consultation.</p>
Level 2	<p>Physician-patient disagreement increases along the social gradient, with higher levels of disagreement in patients with a low level of education. The resulting misunderstandings may lead to patients' needs being underestimated and to different pathways through the health system depending on the patient's social context.</p>	<p>Comprehensive hypothesis: doctors' expectations and stereotypes, and their feeling of limited capacity of action on the area of prevention could contribute to these disagreements.</p>				<p>A gradient in levels of disagreement between physicians and patients on the cardiovascular risk factors management was observed within the level of education of the patient.</p> <p>A gradient in levels of disagreement between physicians and patients on patient's perceived health status was observed within the level of education of the patient.</p>

(continued)

Table 4. (continued)

Level of knowledge	Qualitative phase: Results and hypothesis				Quantitative phase: Results and hypothesis	
	Common knowledge	Sociological analyses	Psychosocial analyses	Linguistic analyses		Lexicometric analyses
Level I	<p>The social distance perceived by the physician exacerbates physician-patient disagreement on the patient's perceived health. This could lead to underestimation of the patient's needs and to different care pathways depending on the patient's social context. The impact that the physician's own perceptions can have on the quality of the relationship formed with their patients must be taken into account.</p>	<p>Comprehensive hypothesis: Prejudices and stereotyping on the part of physicians, and, conversely, proximity, can arise between a physician and patient of the same sex, same age, same geographical origin, or having a common interest.</p>	<p>Comprehensive hypothesis: influence processes may vary according to patient resources, with more "commanding" registers used for lower socioeconomic classes and more "deliberative" ones for higher classes.</p>			<p>Physicians were more likely than their patients to perceive a social distance between themselves and their patients. "Underestimation" of the patient's perceived health status by the physician compared with the patient's evaluation increased with the degree of perceived distance from their doctor's perspective.</p>

groups with fewer resources tended to delegate decisions back toward the physician. Epidemiological analyses revealed that the desire for a shared decision was stronger for patients with higher levels of education, compared with patients with lower levels of education, in whom the desire for a decision made by the physician alone was more often observed.

“‘Modes of behaving together’ depend on the patient’s social context, and some modes of interaction can therefore put patients at more of a disadvantage” (Knowledge Level 1). “Modes of behaving together” varied according to different types of physicians, their professional practices, and how directive they were in terms of decision making; and also according to different types of patients, their degree of independence, and their health resources. But the strongest hypothesis advanced by the sociologists was that of a significant correlation between inequalities in patient resources and the physician’s behavior. When faced with more reserved physicians, for example, sociologists hypothesize that patients with lower resources run a higher risk of being discriminated against in terms of their health. Conversely, a mode of behavior called “competitive knowledge” was observed when patient and physician shared a similar higher “social level”; this mode of interaction was never observed for patients in the lower socioeconomic categories (manual workers, service personnel, etc.).

“Physician and patient satisfaction levels are higher in situations of chosen delegation, that is, when patients show proof of both reflexivity and submission to medical authority. Conversely, physicians appear more often dissatisfied with more autonomous patients” (Knowledge Level 1). According to sociological and lexicometric analysis, physicians were more satisfied with situations of chosen delegation, when patients showed evidence of both reflexivity and submission to medical authority. Conversely, physicians appeared more dissatisfied with patients who possessed good health resources and took care of their bodies, with whom a situation of “competitive knowledge” could arise during the consultation.

The vocabulary used by the physician tends to be more subjective and marked by familiarity, evaluation and value judgments with elderly patients of a lower socioeconomic class. This could explain various misunderstandings between physicians and patients about more abstract dimensions of the consultation. (Knowledge Level 2)

Linguists observed that, with an elderly patient of a low socioeconomic class, the physician tended to use more subjective vocabulary, marked by familiarity, evaluation, and value judgments. On the other hand, discourse was more modalized and more nuanced with autonomous patients, who had resources in terms of medical knowledge and a good relationship with their body, although this result did not necessarily impact the quality of interaction according to the linguistic analyzes. This result resonated with the epidemiologists as a possible explanation for the gradients observed in relation to physician–patient disagreements on the abstract dimensions of the consultation, that are more difficult to assess/measure. The sociologists hypothesize that the level of abstraction and the manipulation of registers that do not reflect the same rationalities may also create distance between physician and patient, particularly in relation to topics such as diet and perceived health. These observations echo the result obtained by the lexicometry expert, who showed that the use of pain vocabulary was rare and seemed to be specific to patients with good resources. Analysis of significant extracts of each lexical category also indicated that the explanatory dimension was more evident for patients with good resources.

Physician–patient disagreement increases along the social gradient, with higher levels of disagreement in patients with a low level of education. The resulting misunderstandings may lead to patients’ needs being underestimated and to different pathways through the health system depending on the patient’s social context. (Knowledge Level 2)

There appeared to be a gradient in levels of disagreement between physicians and patients over management of cardiovascular risk factors that was related to the patient's level of education. Levels of disagreement were higher in patients with no qualifications and also in elderly patients. One hypothesis is that these disagreements could then be the source of misunderstandings and consequently have a detrimental effect on care, in particular the quality of preventive care provided. Physician–patient disagreement was also observed in relation to the perceived health of the patient, with “overestimation” of health by the physician compared with the patient, most frequently in patients with no qualifications. Patients not identified by the health system as being in a poor state of perceived health may then suffer from a lack of treatment, advice or medical follow-up.

The social distance perceived by the physician exacerbates physician–patient disagreement on the patient's perceived health. This could lead to underestimation of the patient's needs and to different care pathways depending on the patient's social context. The impact that the physician's own perceptions can have on the quality of the relationship formed with their patients must be taken into account. (Knowledge Level 2)

According to epidemiological analyses, physicians were more likely than their patients to perceive a social distance between themselves and their patients. Likewise, “overestimation” of the patient's perceived health by the physician increased with the degree of perceived distance with the patient from the doctor perspective. Conversely, the perception of proximity to their patient minimized the occurrence of disagreement. This observation echoes the hypotheses produced by sociological analyses, particularly with regard to the influence processes that vary according to patient resources, with more “commanding” registers used for lower socioeconomic classes and more “deliberative” ones for higher classes. Prejudices and stereotyping on the part of physicians, and, conversely, proximity, can arise between a physician and patient of the same sex, same age, same geographical origin, or having a common interest, such as meeting at a parents' evening.

Discussion

The work to integrate the qualitative and quantitative data produced by the INTERMEDE Project has enabled us to form a core of conclusions shared by all the teams involved. It has allowed a more nuanced understanding of the relationship between a patient and their physician, and the elements of their interaction that can cause SIH. The underlying logic of MMR is that the formulation of conclusions shared by all teams is stronger than if the results from each discipline were considered separately, and that neither the qualitative nor the quantitative method is sufficient to capture the complexity of a situation. Each method can capitalize on the strengths of the other methods (Creswell & Plano Clark, 2007; Guével & Pommier, 2012), and the limitations of one approach are compensated by the strengths of another (Tashakkori & Creswell, 2008). Using qualitative and quantitative methods, one of the objectives of multidisciplinary collaboration on the INTERMEDE Project was to integrate the approaches of the various disciplinary teams throughout the project, right from the formulation of the research hypotheses, and to reflect on shared findings.

Interdisciplinary Integration at the Various Stages of the INTERMEDE Project

The INTERMEDE Project was based on the shared initial hypothesis that physician–patient interaction is influenced by the patient's social context, which could lead to different, socially

determined behaviors on the part of both physician and patient, and would favor, or at least would not help reduce, SIH. The purpose of the research was therefore identical for all disciplinary teams involved with the project: To characterize physician–patient interaction using the approaches specific to each method, and then to *identify mechanisms of the physician–patient interaction that may contribute to the occurrence of social inequalities of health based on a social gradient*.

The unit of analysis was also common to all disciplines: the interaction between a physician and their patient. Each discipline then examined mirrored data on the experience of the consultation from the perspectives of both physician and patient. Two distinct samples were used for the two sequential phases of the study, involving different samples of physicians and patients. They were, however, recruited from the same three sites, and were selected to be representative.

The various disciplinary teams looking at the two bodies of data defined, first, variables that described physician–patient interaction, and, second, variables reflecting the social context of the patient. The resulting strategies for analysis enabled discussion on the same dependent variable, physician–patient interaction, characterized differently for each discipline: physician–patient agreement for the epidemiologists, “modes of behaving together” for the sociologists, language characteristics for the linguists, topics raised during consultation for the lexicometry expert, and patient and physician satisfaction for all disciplinary teams. The independent variables were, for all disciplines, the gender and age of the two protagonists and the characteristics of the patient’s social context. The teams met regularly and exchanged results, thus progressing with their analysis in parallel.

In particular, work on a shared body of qualitative data on 36 consultations was carried out by the sociologists, the linguists, and the lexicometry expert. The variables produced by the sociologists’ preliminary work on the qualitative data, such as “modes of behaving together,” physician satisfaction/dissatisfaction, and whether the patient was of low socioeconomic status or not, were all “quantitized” and the linguists and textometry expert were then able to include these variables in their database. The shared work carried out by the four teams on the qualitative data then enabled analysis of a single database comprised common variables. This constituted an initial integration of analysis strategies and results by the sociologists, linguists, and lexicometry expert for a common qualitative corpus, intuitively borrowing strategies described in the literature on MMR (O’Cathain, Murphy, & Nicholl, 2010; Pluye, Nadeau, et al., 2009; Teddlie & Tashakkori, 2003). Thus, the INTERMEDE Project involved the integration of results produced by the teams that worked on the qualitative corpus, nested within the wider integration of the qualitative and quantitative data.

The Integration of Qualitative and Quantitative Results in the INTERMEDE Project

In order to formalize a core of common conclusions shared by all teams by identifying points of convergence, divergence, and isolated observations, an experimental methodology was developed, inspired by the Delphi method. Although the objective was not to strive for a consensus but to highlight points of shared knowledge, while respecting the various perspectives of each discipline, the development of a method based on the Delphi method offered various benefits (Bourrée, Michel, & Salmi, 2008). The Delphi method allows flexibility of use and is used in many areas of public health such as for clinical research, defining best practice, and choosing public health strategies, as well as being used outside the field of health care (Fink, Kosecoff, Chassin, & Brook, 1984). “In public health, these methods are usually used to shed light on an issue, make decisions, generate ideas, or to rank information in situations where scientifically-grounded information is lacking or where there is a surplus of contradictory information” (Bourrée et al., 2008, p. 416). The characteristics of the Delphi method, as applied in its

original form, are the anonymity of participants, the iterative procedure, and the quantified analysis of the group's responses. At each new round, the experts receive the results of the first round with the median and dispersion of everyone's opinions. They can then change their opinions or maintain them, by completing the questionnaire again. The rounds can be reorganized as many times as necessary until all the experts reach a consensus. Different variants of the Delphi method are commonly used and are typically referred to as modified Delphi methods (Bourrée et al., 2008; McKenna, 1994). These may, for example, incorporate a meeting of the participants, such as in the mini-Delphi, or vary according to the objectives to be achieved, which might be to reach a consensus but could also be to obtain the largest range of opinions possible, or to produce new ideas, as in the Imen-Delphi method (Bourrée et al., 2008; Keeney, Hasson, & McKenna, 2006; Passig, 1997). In any case, the points usually found in all variants of the Delphi are a number of rounds at least equal to two, an iterative process, and feedback to participants. The limitations of the Delphi method are described in the literature (Fink et al., 1984): reliability increases with the number of rounds and the size of the group, but the participants often struggle to respond after three rounds, and the coordination of large groups and numerous rounds can be costly (Fink et al., 1984; Starkweather, Gelwicks, & Newcomer, 1975). The concepts of expert and anonymity have also been queried by some authors, as well as the validity of the results produced by this type of method (Sackman, 1975).

The organization of iterative rounds at regular intervals, comprising a questionnaire to be completed by each expert, enabled each member of the INTERMEDE team to reflect on the various shared results of the project, and to formulate their agreement or disagreement with shared conclusions, without pressure from the group or time constraints. The benefit of this process was that it enabled a complex exercise to be handled in a systematic manner, while avoiding any interpersonal influence. It enabled us to summarize information and compare contradictory opinions, with the aim of defining points of convergence and points of divergence or indecision between experts. After two rounds, three questionnaires/summary documents, and the plenary meeting, three categories of shared findings emerged, reflecting the level of agreement between the observations and hypotheses of each team, or isolated observations made by a single team. The results were formalized into summary tables that intuitively resembled a convergence coding matrix, with the different teams identifying four principal themes of results, or "meta themes" (Farmer, Robinson, Elliott, & Eyles, 2006; O'Cathain et al., 2010).

No divergences of results were observed in the INTERMEDE project except in relation to the lexical convergence and dynamic of adjustment observed by the lexicometry expert between physicians and patients. The linguists were not able to conclude any lexical convergence from studying lexical particularities. This divergence could be explained by the different data source: The lexicometry expert was using an analysis of all the data, irrespective of individual consultations (i.e., all words spoken by all patients on one side, and all words spoken by all physicians on the other), whereas the linguists approached this element by measuring shared vocabulary between patient and physician within any given consultation. After a discussion at the plenary meeting, this result was disregarded. How to take into account divergent results represents one of the challenges of MMR (Mark & Shotland, 1985; Morgan, 2007). It is all the more problematic when the qualitative data "tell a different story" from the quantitative results. It has been suggested that in such cases the quantitative and qualitative approaches should be seen as complementary and not in competition (Clarke, 2009). Various strategies are proposed in the literature for finding a solution to divergences between qualitative and quantitative data or results, such as running further analyses, initiating a new research project on the basis of a new hypothesis, or even excluding part of the data (Guével & Pommier, 2012; Pluye, Grad, Levine, & Nicoleau, 2009).

Nevertheless, although divergent results were not a major problem in the integration of qualitative and quantitative data in the INTERMEDE Project, we did have difficulties with the “silence” with which certain results were met. The teams could not give their opinions on certain results produced by other disciplines because of their specific methodological framework. For example, the linguists were not able to provide feedback on the syntagmatic/paradigmatic dichotomy observed using statistical analysis, or on the analyses based on topics raised, due to their methodological framework. However, this was also due to insufficient numbers, as could have been the case in the epidemiological analyses exploring factors related to the satisfaction/dissatisfaction of patient and physician, and to the compliance of patients with the treatments and advice given by the physician after the consultation in question. Another possible reason for these silences is the difficulty encountered by certain teams in providing feedback on the results of other disciplines. Certain disciplines managed to incorporate the results of another team and generate new hypotheses for research, while others only commented on their own results and had more difficulty giving their opinion on shared observations and hypotheses. The sociologists formulated new questions for consideration from numerous results, and the epidemiologists looked for possible explanations for their results in the observations of other disciplinary teams. Furthermore, while the epidemiologists wanted to be able to formulate concrete recommendations at the end of the interdisciplinary integration process, the other disciplinary teams did not wish to make decisions on any recommendation from results observed. It was also the epidemiologists who dealt with the integration of the results, expressing a desire to formalize the conclusions common to all the teams. Likewise, the notion of category did not have the same significance from one discipline to another. The typology proposed by the sociologists from the frequently occurring themes emerging in their corpus at the start of the INTERMEDE Project was ultimately removed from the final results at their request. They wanted to verify the stability of their hypothesis with a long-term study of physician–patient interaction. O’Cathain showed that silences can be expected because of the fact that approaches and frameworks of analysis are specific to each discipline, examining certain aspects of a same object of study more closely. Nevertheless, the occurrence of unexpected silences from certain disciplinary teams can also lead to a better understanding of a phenomenon and the generation of new investigations (O’Cathain et al., 2010).

Each discipline was able to provide a different perspective and understanding of a same object, based on their own specific methodological framework and paradigm, but it is important to emphasize that the formalization of a unique consensus around a single result was not possible. The results of one team could echo the observations of another discipline, or support the formulation of a hypothetical explanation or understanding. Three types of shared findings and four themes of results were able to be formulated based on the convergence of interdisciplinary approaches. These observations raise the question of the very nature of interdisciplinary research itself. In our work the disciplines analyzed and interpreted data from their own perspective—though project-level meetings throughout led all researchers to confront their work with perspectives and positions from other disciplines. The delimited differences between disciplines were subsequently overcome via the methodological process of integration. By integrating the findings and results from each of the participating disciplines using a methodological approach, we feel that the overarching findings achieve a result that surpasses the sum of its parts. In this way, disciplinary integrity was maintained and interdisciplinary production was achieved.

These various observations raise the epistemological question that lies at the heart of all projects using MMR, and that is at the very center of numerous debates concerning this field of research (Teddlie & Tashakkori, 2003). Faced with this question of the place of discipline-specific paradigms in MMR, some authors propose solutions such as the dialectical path, the

selection of a single paradigm for one piece of research, such as pragmatism (Bryman, 2007; Lincoln & Guba, 1985; Morgan, 2007; Teddlie & Tashakkori, 2003). Other authors argue that it would be more instructive to see qualitative and quantitative methods as belonging to a continuum of research methods, and that the key concern is that the disciplines make sure they answer the same research question (Casebeer & Verhoef, 1997; Mark & Shotland, 1985). The first fundamental step is to pay rigorous attention to the selection of samples, the data collection instruments, and the analysis process, in order to ensure that both components explore the same issue (Clarke, 2009).

Another source of debate concerning the simultaneous use of qualitative and quantitative methods is the priority accorded to one of these approaches in every study. Morse, Wolfe, and Niehaus (2006) argue that “a mixed-method design never has two components of equal weighting” and that the theory put forward by the dominant phase steers the supplementary phase. In sequential exploratory protocols, the phase typically designated as dominant is the qualitative phase, which produces the hypotheses explored during the second quantitative phase (Creswell & Plano Clark, 2007). During the design of the INTERMEDE Project, neither phase was deemed *a priori* dominant; there are also questions to be asked about the line between what is called qualitative and what quantitative. MMR studies employ qualitative and quantitative methods. In the case of the INTERMEDE Project, we can distinguish between a qualitative corpus composed of observations from the consultation and interviews with patients and physicians, and a quantitative corpus comprising mirrored questionnaires completed by patients and physicians. But the qualitative corpus formed the subject of multiple analyses: not only sociological analysis but also quantitative analysis borrowing the linguistic and lexicometric methods of analysis. For some authors, this dichotomy between qualitative and quantitative methods masks the variety of this field of research (Yin, 2006).

Conclusion

The INTERMEDE Project faced various challenges specific to the development and publication of mixed methods social and health care research, such as the importance of the publication of MMR projects, the training of inexperienced researchers, and awareness-raising in practitioners. MMR is very rarely used for public health research in France, and its development is a genuine challenge (Guével & Pommier, 2012). Leading figures in the field of MMR agree that these methods require specific training and instruction (Bryman, 2007; Clarke, 2009; Stewart et al., 2008), and that it seems important that researchers are not only competent in conducting both qualitative and quantitative study but also in conducting MMR (Morgan, 1998; O’Cathain, Murphy, & Nicholl, 2008). Nevertheless, having a team of researchers that are able to discuss and exchange information with researchers from other branches of study, as was the case for the INTERMEDE Project, represents a fundamental prerequisite for developing this type of research and initiating innovative methodologies.

The INTERMEDE Project involved the integration of interdisciplinary analyses in two stages, with an initial stage of integration within the qualitative corpus. To integrate the results produced from the qualitative and quantitative data, for which the samples were different, the selection of a participatory method inspired by the Delphi method allowed us to compare contradictory opinions and to define convergent points from the various disciplines as well as isolated facts. One of the major challenges of integration lies in the analysis and results phase, a stage at which the need for expertise is most vital and specific to each field of research. This approach has significant potential for understanding the effective actions that should be implemented to reduce SIH, especially in the area of primary care.

Ethical Approval

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References

- Bourrée, F., Michel, P., & Salmi, L. R. (2008). Consensus methods: Review of original methods and their main alternatives used in public health. *Revue D Epidemiologie Et De Sante Publique, 56*, 415-423. doi:10.1016/j.respe.2008.09.006
- Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research, 1*(1), 8-22. doi:10.1177/2345678906290531
- Casebeer, A. L., & Verhoef, M. J. (1997). Combining qualitative and quantitative research methods: Considering the possibilities for enhancing the study of chronic studies. *Chronic Diseases in Canada, 18*, 130-135.
- Clarke, P. (2009). Understanding the experience of stroke: A mixed-method research agenda. *The Gerontologist, 49*, 293-302. doi:10.1093/geront/gnp047
- Cooper, L. A., Roter, D. L., Johnson, R. L., Ford, D. E., Steinwachs, D. M., & Powe, N. R. (2003). Patient-centered communication, ratings of care, and concordance of patient and physician race. *Annals of Internal Medicine, 139*, 907-915.
- Creswell, J. W., Fetters, M. D., & Ivankova, N. V. (2004). Designing a mixed methods study in primary care. *Annals of Family Medicine, 2*, 7-12. doi:10.1370/afm.104
- Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.
- Dalkey, N., & Helmer-Hirschberg, O. (1962). *An experimental application of the Delphi method to the use of experts*. Santa Monica, CA: Rand.
- De Gaudemaris, R., Lang, T., Chatellier, G., Larabi, L., Lauwers-Cances, V., Maitre, A., & Diene, E. (2002). Socioeconomic inequalities in hypertension prevalence and care: The IHPAF study. *Hypertension, 39*, 1119-1125. doi:10.1161/01.hyp.0000018912.05345.55

- Farmer, T., Robinson, K., Elliott, S. J., & Eyles, J. (2006). Developing and implementing a triangulation protocol for qualitative health research. *Qualitative Health Research, 16*, 377-394. doi: 10.1177/1049732305285708
- Fink, A., Kosecoff, J., Chassin, M., & Brook, R. H. (1984). Consensus methods: Characteristics and guidelines for use. *American Journal of Public Health, 74*, 979-983. doi:10.2105/ajph.74.9.979
- Fourriaud, C., Jacquinet-Salord, M. C., Degoulet, P., Aime, F., Lang, T., Laprugne, J., & . . . Prades, A. (1984). Influence of socioprofessional conditions on blood pressure levels and hypertension control. Epidemiologic study of 6665 subjects in the Paris district. *American Journal of Epidemiology, 120*, 72-86.
- Genolini, J. P., Roca, R., Rolland, C., & Membrado, M. (2011). L'éducation du patient en médecine générale: Une activité périphérique dans la relation de soin [Patient's education in general practice: a peripheral activity in the care relationship]. *Sciences Sociales et Santé, 29*(3), 81-121.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine.
- Goldstein, H. (1995). *Multilevel statistical models*. London, England: Edward Arnold.
- Gordon, H., Street, R. L.Jr., Kelly, P. A., Soucek, J., & Wray, N. P. (2005). Physician-patient communication following invasive procedures: An analysis of post-angiogram consultations. *Social Science & Medicine, 61*, 1015-1025.
- Gordon, H., Street, R. L.Jr., Sharf, B. F., & Soucek, J. (2006). Racial differences in doctors' information-giving and patients' participation. *Cancer, 107*, 1313-1320.
- Guével, M. R., & Pommier, J. (2012). Recherche par les méthodes mixtes en santé publique: Enjeux et illustration [Mixed methods research in public health: issues and illustration]. *Santé Publique, 24*(1), 23-38.
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research, 1*(2), 112-133. doi:10.1177/1558689806298224
- Keeney, S., Hasson, F., & McKenna, H. (2006). Consulting the oracle: Ten lessons from using the Delphi technique in nursing research. *Journal of Advanced Nursing, 53*, 205-212. doi: 10.1111/j.1365-2648.2006.03716.x
- Kelly-Irving, M., Afrite, A., Pascal, J., Cases, C., Lombrail, P., & Lang, T. (2008). Patient-physician interaction and the production of health inequalities in a French multidisciplinary study: An original methodology and preliminary findings from the intermede project. *Journal of Epidemiology and Community Health, 62*, A21-A21.
- Kelly-Irving, M., Delpierre, D., Schieber, A. C., Lepage, B., Rolland, C., Afrite, A., & . . . Lang, T. (2011). Do general practitioners overestimate the health of their patients with lower education? *Social Science & Medicine, 73*, 1416-1421.
- Kelly-Irving, M., Rolland, C., Afrite, A., Cases, C., Dourgnon, P., Lombrail, P., & . . . Lang, T. (2009). Patient-physician interaction in general practice and health inequalities in a multidisciplinary study: Design, methods and feasibility in the French INTERMEDE study. *BMC Health Services Research, 9*, 8. doi:10.1186/1472-6963-9-66
- Kinnersley, P., Stott, N., Peters, T. J., & Harvey, I. (1999). The patient-centredness of consultations and outcome in primary care. *British Journal of General Practice, 49*, 711-716.
- Krupat, E., Bell, R. A., Kravitz, R. L., Thom, D., & Azari, R. (2001). When physicians and patients think alike: Patient-centered beliefs and their impact on satisfaction and trust. *Journal of Family Practice, 50*, 1057-1062.
- Lang, T., Ducimetiere, P., Arveiler, D., Amouyel, P., Ferrieres, J., Ruidavets, J. B., & . . . Bingham, A. (1998). Is hospital care involved in inequalities in coronary heart disease mortality? Results from the French WHO-MONICA Project in men aged 30-64. *Journal of Epidemiology and Community Health, 52*, 665-671.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Marchand, P. (2007). Concepts, méthodes, outils [Concepts, methods, tools]. In C. G. D. Peyrat-Guillard (Ed.), *Analyse statistique de données textuelles en sciences de gestion* [Statistical analysis of textual data in sciences of management] (pp. 48-70) Paris, France: Editions EMS.

- Mark, M. M., & Shotland, R. L. (1985). Toward more useful science. In R. L. Shotland & M. M. Mark (Eds.), *Social science and social policy* (pp. 335-370). Beverly Hills, CA: Sage.
- McKenna, H. P. (1994). The Delphi technique: A worthwhile research approach for nursing. *Journal of Advanced Nursing*, 19, 1221-1225. doi:10.1111/j.1365-2648.1994.tb01207.x
- Membrado, M. (2014). La confiance et les enjeux de la reconnaissance dans l'interaction médecin-patient en médecine générale [Trust and issues of recognition in the doctor-patient interaction in general practice]. In S. Pennec, F. Le Borgne-Uguen & F. Douguet (Eds.), *Les négociations du soin. Les professionnels, les malades et leurs proches* [Negotiations of care. Professionals, patients and their relatives] (pp. 51-56) Rennes, France: Presses Universitaires de Rennes.
- Morgan, D. L. (1998). Practical strategies for combining qualitative and quantitative methods: Applications to health research. *Qualitative Health Research*, 8, 362-376. doi:10.1177/104973239800800307
- Morgan, D. L. (2007). Paradigms lost and pragmatism regained methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, 1(1), 48-76. doi: 10.1177/2345678906292462
- Morse, J. M., Wolfe, R. R., & Niehaus, L. (2006). Principles and procedures of maintaining validity for mixed-method design. In L. Curry, R. Shield & T. Wetle (Eds.), *Improving aging and public health research: Qualitative and mixed methods* (pp. 65-78). Washington, DC: American Public Health Association.
- O'Cathain, A., Murphy, E., & Nicholl, J. (2008). The quality of mixed methods studies in health services research. *Journal of Health Services Research & Policy*, 13(2), 92-98. doi:10.1258/jhsrp.2007.007074
- O'Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *British Medical Journal*, 341, c4587. doi:10.1136/bmj.c4587
- Passig, D. (1997). Imen-Delphi: A Delphi variant procedure for emergence. *Human Organization*, 56(1), 53-63.
- Pluye, P., Grad, R., Levine, A., & Nicoleau, B. (2009). Understanding divergence of quantitative and qualitative data (or results) in mixed methods studies. *International Journal of Multiple Research Approaches*, 3(1), 58-72.
- Pluye, P., Nadeau, L., Gagnon, M. P., Grad, R., Johnson-Lafleur, J., & Griffiths, F. (2009). Les méthodes mixtes [Mixed methods]. In V. Ridde & C. Dagenais (Eds.), *Approche et pratiques en évaluation de programme*. [Approaches and practices in programs' evaluation] (pp. 123-141). Montréal, Québec, Canada: Les presses de l'Université de Montréal Les méthodes mixtes. Mixed methods. And : Approche et pratiques en évaluation de programme. Approaches and practices in programs' evaluation.
- Sackman, H. (1975). *Delphi critique*. Lexington, MA: D.C. Health.
- Schieber, A. C., Kelly-Irving, M., Delpierre, C., Lepage, B., Bensafi, A., Afrite, A., & . . . Lang, T. (2012). Is perceived social distance between the patient and the general practitioner related to their disagreement on patient's health status? *Patient Education and Counseling*, 91, 97-104. doi: 10.1016/j.pec.2012.11.012
- Schieber, A. C., Kelly-Irving, M., Rolland, C., Afrite, A., Cases, C., Dourgnon, P., & . . . Lang, T. (2011). Do doctors and patients agree on cardiovascular-risk management recommendations post-consultation? The INTERMEDE study. *British Journal of General Practice*, 61, 178-182. doi: 10.3399/bjgp11X561159
- Slocum, N. (2006). *Méthodes participatives. Un guide pour l'utilisateur* [Participatory methods. User's guide]. Brussels, Belgium: Fondation Roi Baudouin.
- Starkweather, D., Gelwicks, L., & Newcomer, R. (1975). Delphi forecasting of health care organization. *Inquiry*, 12, 252-262.
- Stewart, M., Makwarimba, E., Barnfather, A., Letourneau, N., & Neufeld, A. (2008). Researching reducing health disparities: Mixed-methods approaches. *Social Science & Medicine*, 66, 1406-1417. doi:10.1016/j.socscimed.2007.11.021
- Street, R. L., O'Malley, K. J., Cooper, L. A., & Haidet, P. (2008). Understanding concordance in patient-physician relationships: Personal and ethnic dimensions of shared identity. *Annals of Family Medicine*, 6, 198-205. doi:10.1370/afm.821

- Taira, D. A., Safran, D. G., Seto, T. B., Rogers, W. H., & Tarlov, A. R. (1997). The relationship between patient income and physician discussion of health risk behaviors. *Journal of the American Medical Association, 278*, 1412-1417. doi:10.1001/jama.278.17.1412
- Tanguy, L., Fabre, C., Ho-Dac, L.-M., & Rebeyrolle, J. (2011). Caractérisation des échanges entre patients et médecins: Approche outillée d'un corpus de consultations médicales [Characterization of the interaction between patients and physicians: a tooled approach of a corpus of medical consultations]. *Corpus, 10*, 137-154.
- Tashakkori, A., & Creswell, J. W. (2008). Mixed methodology across disciplines. *Journal of Mixed Methods Research, 2*(1), 3-6. doi:10.1177/1558689807309913
- Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 3-50). Thousand Oaks, CA: Sage.
- Willems, S., De Maesschalck, S., Deveugele, M., Derese, A., & De Maeseneer, J. (2005). Socio-economic status of the patient and doctor-patient communication: Does it make a difference? *Patient Education and Counseling, 56*, 139-146. doi:10.1016/j.pec.2004.02.011
- Yin, R. K. (2006). Mixed methods research: Are the methods genuinely integrated or merely parallel? *Research in the Schools, 13*(1), 41-47.