Cross-cultural adaptation of the Quebecois Patient-Centered Coordination by a Care Team Questionnaire for use in France

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Arthur Piraux[1,2], Marie-Eve Poitras[3], Sandra Lemarchand[4], Stephanie Sidorkiewicz[5,6] and Aline Ramond-Roquin[1,3,4*]

Abstract

Background The prevalence of chronic disease and multimorbidity is increasing and the associated disease and treatment burden is particularly heavy. Coordinated multidisciplinary, patient-centered care is particularly important for people living with chronic disease or multimorbidity. There was no valid tool to measure the quality of coordinated patient-centered care from the patient's perspective until the Patient-Centered Coordination by a Care Team (PCCCT) questionnaire was recently developed in Canada (Quebec/Ontario). The Quebecois version has been validated but is not directly transferable to France due to linguistic, cultural and health system differences between the two countries. To perform a cross-cultural adaptation of the Quebecois PCCCT questionnaire is therefore necessary to obtain a questionnaire's new version adapted for use in France, ensuring item and semantic equivalence.

Methods The adaptation process consisted of two stages, both of which were supervised by a scientific committee made up of five healthcare professionals. The first stage was a Delphi consensus involving a multidisciplinary healthcare professional panel to evaluate and harmonize the clarity and appropriateness of the questionnaire for patients in the French health system. During the second stage, adult patients with one or more chronic diseases, from various age, sex, socio-occupational categories, assessed the comprehensibility and conformity of the adapted version of the questionnaire resulting from stage 1 and improved it if necessary. This was achieved using cognitive interviews.

Results During Stage 1, two rounds were undertaken with 10 professional experts resulting in consensual reformulation of 10 out of the 14 items. These newly formulated items and the 4 remaining items were submitted to patients in Stage 2. Cognitive interviews were undertaken with 14 patients, testing 3 successively adapted versions of the questionnaire, until three consecutive patients did not find any ambiguity or misunderstanding. The final version resulting from the cross-cultural adaptation process aimed at being used in France, has item and semantic equivalence to the original Quebecois version.

Conclusions Measurement equivalence will be addressed in a future study. This French version is intended to be a useful resource for the health system reforms aimed at promoting more integrated and patient-centered care pathways.

Keywords Coordination of care, Patient-centered care, Teamwork, Patient reported experience measure, Primary care, Health care organization, Chronic disease

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Background

Prevalence of chronic diseases is increasing due to the aging population, medical advances, and certain socio-environmental factors [1, 2]. Multimorbidity, defined as the co-existence of several diseases in the same individual, affects nearly 65% of people over 65 years of age [3, 4]. The burden for those living with chronic diseases is multidimensional and involves physical, mental, occupational, financial, social, and familial impacts. It is particularly heavy for people with multimorbidity and those close to them [5], and this is worsened by the burden of treatment [6].

Multidisciplinary care is required to meet the health needs of people living with chronic diseases and multimorbidity [7, 8]. This care is more effective if coordination between the different healthcare professionals is optimal [9]. Good care coordination is associated with improved symptoms, treatment adherence and patient satisfaction, reduced numbers of hospitalizations, better control of chronic diseases (such as glycated hemoglobin), and reduced mortality [10].

In addition, patient-centered care is particularly relevant in improving the health of people living with chronic diseases [11]. This approach requires a relationship of trust, collaboration between the patient and clinician(s) and shared decision-making to ensure their health needs are met [12, 13]. The benefits of patient-centered care include increased patient satisfaction, greater autonomy to manage their health, improved quality of care, reduced risk of complications from chronic diseases, reduced rehospitalization and improved quality of life and well-being [14, 15]. Positive effects have also been observed for those close to the patient and healthcare professionals [16].

Several countries have initiated reforms aimed at strengthening and structuring primary care to ensure that it is more coordinated and patient-centered [17–19]. This most often involves supporting the creation of formalized multidisciplinary teams [20], for example with multi-professional health centers in France, or family medicine groups and patient medical homes in Canada [20–23].

Until recently, there was no valid tool to measure the quality of coordinated patient-centered care provided by a multidisciplinary team from the patient's perspective. As part of the Canadian research program [24], PACEinMM (Patient-Centered Innovations for Persons with Multimorbidity Study), aimed at evaluating clinical innovations for multimorbid people, the 2-part Patient-Centered Coordination by a Care Team (PCCCT) questionnaire, was developed. The first part is a checklist of healthcare professionals involved in the patient's care. The second part contains 14 items assessing the patient's opinion about how patient-centered and coordinated their care is. Each item is rated from zero to three points, which generates a total score ranging from 0 (imperceptible coordination) to 42 (optimal coordination). The PCCCT questionnaire was initially developed in English language (Fig. 1A) and in French language for Quebec (Fig. 1B). The English version has not been evaluated in terms of psychometric properties to date. Evaluations of the French version for Quebec revealed that the questionnaire has satisfactory validity and reliability [25].

The original version, designed and evaluated in Quebec, is not directly transferable to France due to linguistic, cultural and health system organizational differences between the two countries. These differences can make some items irrelevant or change their meaning and affect how people answer a given question.

This study aims to perform cross-cultural adaptation of the Quebecois PCCCT questionnaire to obtain a new version adapted for use in France ensuring item and semantic equivalences between the two versions.

Methods

The cross cultural method used to adapt the PCCCT questionnaire in this study was based on guidelines for the adaption of self-reported measures [26]. During cross-cultural adaptation, equivalence is based on five dimensions: conceptual, item, semantic, operational and measurement equivalence [27]. Due to linguistic, cultural and health system organizational differences, item and semantic equivalences are unlikely. This study therefore focuses on these two equivalences. Conceptual and operational equivalence already exist since coordinated patient-centered care has the same relevance in Quebec and France [28, 29] and the similar literacy levels mean the questionnaire can be used in the same way [30] in both settings. Measurement equivalence will be addressed in a future study.

The cross-cultural adaption process took place between September 2020 and February 2021. It consisted of two stages: the Delphi consensus, carried out between September 2020 and October 2020, and the cognitive interviews, between November 2020 and February 2021. Both stages were supervised by a single scientific committee made up of five healthcare professionals with academic activity, two of whom had a dual French-Quebecois perspective (Table 1).

Stage 1: Delphi consensus

The first stage was a Delphi consensus [31] involving a multidisciplinary health professional panel to evaluate and harmonize the clarity and appropriateness of the

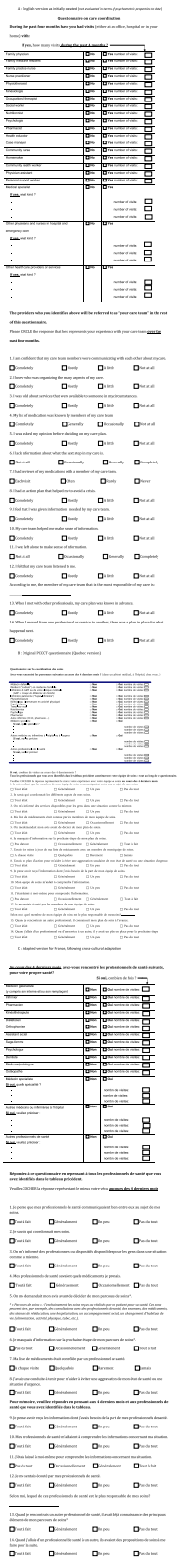

Fig. 1 Patient-centered coordination by a care team (PCCCT) questionnaire. **A** English version as initially created. **B** Original PCCCT questionnaire (Quebec version). **C** Adapted version for France, following cross-cultural adaptation

questionnaire for patients using the French health care system.

Purposive sampling was used to recruit healthcare professionals with experience in coordinated care from diverse professions, practice structures, and cultural backgrounds. They were invited by e-mail to participate and a detailed information letter on the project was sent. All the professionals contacted accepted and participated in the Delphi rounds. The expert panel consisted of ten healthcare professionals, one of whom was from Quebec and was involved in creating the original questionnaire (Table 2).

Firstly, the scientific committee proposed an initial adaptation of the 14 items from the original Quebecois version (V0), called version V1. The list of the healthcare professionals visited by patients, which precedes the 14 items, was also modified by the scientific committee: some occupational categories, such as "nurse practitioner" or "kinesiologist" which are not present in France, were removed. All the questionnaire adaptations made by the scientific committee (related to items or list of professionals) were carried out by oral consensus, via live synchronous videoconferences.

During the first Delphi round, versions V0 and V1 were submitted to the group of experts using an electronic LimeSurvey® form. Each expert was contacted individually by e-mail asking for a response within one week. For each item, the expert was asked: "Do you think this new formulation is sufficiently clear and adapted to a patient using the French health system?". The expert was reminded of the need to maintain the original meaning of the item. Each expert indicated their degree of agreement with the reformulation by assigning a score between 1 (completely unsuitable) and 9 (completely suitable). Each score below 7 had to be justified with a comment.

At the end of the first round, the scientific committee met to examine all the items with an average score below 8 and/or with less than 70% of scores greater than or equal to 7. No specific tools or programs have been used to analyze scores, except for the Excel tool. For each item not reaching consensus (as defined just above), the scientific committee used the experts' comments to reformulate the item creating version V2.

Only those items that had not yet achieved consensus, were submitted, in versions V0 and V2, to the group of experts in the second Delphi round. In order to not influence their views and decisions, experts were not provided

Table 1 Scientific committee composition

Gender	Occupation	Research experience (during the study)	Practice structure	Country of practice	Involved in creating the original PCCCT
F	General practitioner	Student (thesis)	Outpatient	France	No
M	Pharmacist	Student (PhD)	Outpatient	France	No
F	General practitioner	Researcher	Outpatient + inpatient	France[a]	Yes
F	Primary care nurse	Researcher	Outpatient + inpatient	Quebec[b]	Yes
F	General practitioner	Researcher	Outpatient	France	No

[a] Professor at the University of Angers, France, and Associate Professor at the University of Sherbrooke, Quebec

[b] Professor at the University of Sherbrooke and collaborates in several research projects in France

Table 2 Composition of the expert panel, in alphabetical order (Stage 1, Delphi round)

Gender	Occupation	Research experience	Practice structure	Practice location	Involved in creating the PCCCT
M	Male nurse	None	Hospital	France	No
F	Psychologist	None	Outpatient + inpatient	France	No
M	General practitioner	Researcher	Outpatient + inpatient	Quebec[a]	Yes
M	Physiotherapist	None	Outpatient + inpatient	France	No
M	Public health physician	Researcher	Not applicable	France[b]	No
F	Social worker	None	Hospital	France	No
F	Dietitian	None	Outpatient	France	No
F	Occupational physician	Researcher	Hospital	France	No
M	Gastro-oncologist	None	Hospital	France[c]	No
M	Physiotherapist	Master's student	Outpatient	France	No

[a] This expert practices in Quebec and knows the French system well because of their academic activities

[b] This expert has carried out several studies comparing health systems between different countries

[c] This expert is a doctor in France and has practiced for two years in Quebec

with other experts' comments from the first Delphi round.

Additional rounds would be performed until consensus was reached for all items.

Stage 2: Cognitive interviews

During the second stage, patients assessed the comprehensibility and conformity of the adapted version of the questionnaire resulting from stage 1 and improved it if necessary. The checklist of health professionals was also submitted to the patients. This was achieved using cognitive interviews.

Two members of the scientific committee (SL and AP) recruited patients, first from a rural general practice, and then from an urban community pharmacy, as complementary support. Adult patients who could speak French, had one or more chronic illnesses (physical and/or mental) and benefited from regular monitoring were eligible for inclusion. For each patient, sociodemographic data were collected (gender, age, profession and socio-professional category, health condition). Purposive maximum variation sampling was used to obtain a diverse patient panel [32] including gender, age, socio-professional category (proxy for literacy level) and chronic diseases. Eligible patients were invited to participate in the study at the end of a medical consultation or a visit to the pharmacy. Potential participants were provided with an information letter explaining the nature of the study. Those who accepted provided written consent. Two patients refused to participate. Two accepted but one was excluded before data collection due to cognitive disorders preventing them from being able to read and sadly, the other died unexpectedly before the interview.

One female general practitioner (SL) conducted the cognitive interviews. She had no previous interview experience and received training from the senior researcher who supervised her (ARR). Each patient was interviewed individually. The objective was to

systematically identify any discrepancies between the researchers' and the patient's understanding of the item and to improve the formulation if necessary [33, 34]. The patients were provided with the adapted version of the questionnaire resulting from stage 1 and the checklist of healthcare professionals involved in their care at recruitment. They were instructed to only read it during the interview to ensure the patient's spontaneous reactions were collected. Patients were asked to read each item aloud, rephrase it in their own words, and point out any ambiguity or misunderstanding. They then answered the item, thinking aloud and giving reasons for their response. If discrepancy or ambiguity was identified, the patient was invited to suggest a possible reformulation following an explanation from the researcher.

The interviews took place by telephone due to the contact restrictions imposed in France during the COVID-19 epidemic. Each interview was audio recorded, transcribed item by item, then compiled interview by interview. This enabled discrepancies, ambiguities, and suggested reformulations for each item to be extracted and reconciled. Any items that patients felt were not applicable to them were also listed. Audio files were archived only on the password-protected computer of the interviewer (SL), and deleted once transcription and de-identification of the excerpts processes were completed. One researcher (SL) analyzed the cognitive interviews under the supervision of a senior researcher (ARR). The analysis process focused on the patients' reaction to the question, their ability to rephrase it, their answer to the question, and the justification they provided for their response. Based on these points, the researcher assessed whether the item was completely understood and if the understanding was adequate in regard to its original meaning. The outcome of her interpretation was noted, as well as patient's comments, in a de-identified report, before submitting it to the scientific committee. The scientific committee met every 3 to 4 interviews to validate the results and modify the questionnaire, if necessary, before the updated version was tested during subsequent interviews with new patients. Data interpretation was carried out blindly by the scientific committee, since patients' identities were not disclosed. The minimum number of cognitive interviews was set at eight, and interviews ended when data sufficiency was reached (no new relevant data after two additional interviews [35]).

The Ethics Committee of Angers University Hospital approved the study on September 1, 2020 (number 2020/106). Neither the health professionals of the panel nor the patients received financial compensation for participating in this project.

Results

Stage 1

The ten included experts completed all the Delphi rounds (100% participation rate). Most responded within the allotted time of seven days per round (maximum three days late).

First Delphi round

The experts accepted seven of the 14 questionnaire items proposed in version V1 (nos. 2, 4, 8, 9, 10, 11 and 12) (Table 3). The scientific committee reformulated five of the seven remaining items, which did not reach consensus (nos. 1, 3, 5, 6, and 13) using the experts' comments (Supplementary Material 1A). However, they were unable to identify a satisfactory alternative for the last two items (nos. 7 and 14) which were resubmitted to the panel during the next round without reformulation.

Second Delphi round

The second round began three weeks after the end of the first. On version V2, three reformulated items (nos. 1, 5 and 6) fulfilled the validation criteria and were accepted (Table 4). The scientific committee could not agree on a reformulation, based on experts' comments and suggestions, for the four remaining items which did not reach consensus (nos. 3, 7, 13 and 14). This was either because the expert comments diverged significantly from each other, or because they diverged from the initial intent of the Quebecois questionnaire (Supplementary Material 1B). The scientific committee, therefore, considered it irrelevant to conduct a third Delphi round. In addition, items 3 and 7 were considered essential to evaluate the person-centred care while items 13 and 14 were considered essential to evaluate the care coordination during transitions. Therefore, items 3, 7, 13, and 14 were not deleted but submitted unchanged to the patients in version V3.

Stage 2

Patient cognitive interviews

A total of 14 cognitive interviews were conducted lasting an average of 30 min. Patient characteristics are summarized in Table 5.

Seven interviews took place using version V3 of the questionnaire and were analyzed before the scientific committee met (Supplementary Material 2A). Several suggestions concerned the checklist of healthcare professionals involved in the patient's care leading to the addition of "ostéopathe" (equivalent to an osteopath) and pédicure-podologue (allied health professional specialized in foot care).

Table 3 Results obtained during the first Delphi round (group of experts)

Item	Original Quebecois version V0	Version 1 from the scientific committee	Mean	Scores ≥ 7
1	Je suis confiant que les membres de mon équipe de soins communiquaient entre eux au sujet de mes soins	Je pense que ces professionnels de santé communiquaient entre eux au sujet de mes soins	6.9	60%
2	Je savais qui coordonnait les différents aspects de mes soins	Je savais qui coordonnait mes soins	8.2	90%
3	On m'a informé des services disponibles pour les gens dans une situation comme la mienne	On m'a informé des ressources disponibles pour les gens dans une situation comme la mienne (par exemples: autre professionnel de santé, association…)	7.9	70%
4	Ma liste de médicaments était connue par les membres de mon équipe de soins	Mes médicaments étaient connus par ces professionnels de santé	8.4	90%
5	On me demandait mon avis avant de décider de mon plan de soins	On me demandait mon avis avant de décider de ma prise en charge	7.4	60%
6	Je manquais d'information sur la prochaine étape de mon plan de soins	Je manquais d'information sur la prochaine étape de ma prise en charge	7.7	70%
7	J'avais des mises à jour de ma liste de médicaments avec un membre de mon équipe de soins	Ma liste de médicaments était contrôlée par un professionnel de santé	7	70%
8	J'avais un plan d'action pour m'aider à éviter une aggravation soudaine de mon état de santé ou une situation d'urgence	J'avais une conduite à tenir pour m'aider à éviter une aggravation de mon état de santé ou une situation d'urgence	8.5	100%
9	Je pense avoir reçu l'information dont j'avais besoin de la part de mon équipe de soins	Je pense avoir reçu les informations dont j'avais besoin de la part de ces professionnels de santé	8.8	100%
10	Mon équipe de soins m'aidait à comprendre l'information	Ces professionnels de santé m'aidaient à comprendre les informations concernant ma situation	8.4	90%
11	J'étais laissé à moi-même pour comprendre l'information	J'étais laissé à moi-même pour comprendre les informations concernant ma situation	8.1	80%
12	Je me sentais écouté par les membres de mon équipe de soins	Je me sentais écouté par ces professionnels de santé	8.8	100%
13	Quand je rencontrais un autre professionnel, il connaissait mon plan de soins à l'avance	Quand je rencontrais un autre professionnel de santé, il prenait connaissance des principaux éléments de ma prise en charge	6.2	30%
14	Quand j'allais d'un professionnel ou d'un service à un autre, il y avait un plan en place pour la prochaine étape	Quand j'étais adressé à un professionnel de santé, une conduite à tenir était proposée pour la prochaine étape	7.7	80%

Table 4 Results obtained during the second Delphi round (group of experts)

Item	Original Quebecois version V0	Version 2 from the scientific committee	Mean	Scores ≥ 7
1	Je suis confiant que les membres de mon équipe de soins communiquaient entre eux au sujet de mes soins	Je pense que ces professionnels de santé communiquaient bien entre eux au sujet de mes soins	8.3	90%
3	On m'a informé des services disponibles pour les gens dans une situation comme la mienne	On m'a informé des professionnels ou dispositifs disponibles pour les gens dans une situation comme la mienne	7.7	80%
5	On me demandait mon avis avant de décider de mon plan de soins	On me demandait mon avis avant de décider de mon parcours de soins	8.1	90%
6	Je manquais d'information sur la prochaine étape de mon plan de soins	Je manquais d'information sur la prochaine étape de mon parcours de soins	8.1	90%
7	J'avais des mises à jour de ma liste de médicaments avec un membre de mon équipe de soins	Ma liste de médicaments était contrôlée par un professionnel de santé	6.9	60%
13	Quand je rencontrais un autre professionnel, il connaissait mon plan de soins à l'avance	Quand je rencontrais un autre professionnel de santé, il avait déjà connaissance des principaux éléments de mon parcours de soins	7.8	80%
14	Quand j'allais d'un professionnel ou d'un service à un autre, il y avait un plan en place pour la prochaine étape	Quand j'étais adressé à un professionnel de santé, une conduite à tenir était proposée pour la prochaine étape	7.7	80%

No patients highlighted any misunderstanding or ambiguity with items 1, 2, 3, 7, 8, 9, 10, 11, 12 so they remained unchanged. The term "parcours de soins" (*"care plan"*) in items 5, 6 and 13 was interpreted differently among patients (as had already been the case among the experts during stage 1) without a satisfactory alternative being found. The scientific committee therefore decided

Table 5 Composition of the patient panel, by order of recruitment (Stage 2, cognitive interviews)

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7	Patient 8	Patient 9	Patient 10	Patient 11	Patient 12	Patient 13	Patient 14
Gender	Man	Woman	Woman	Man	Woman	Woman	Man	Man	Woman	Man	Man	Man	Woman	Woman
Age (years)	22	62	30	25	60	48	43	59	73	72	64	79	58	74
Profession (socio-professional category)	Salaried worker (Factory fitter)	Retired (former account manager)	Intermediate profession (executive assistant)	Without professional activity (student in eco-management license)	Unemployed	Employee (employment counsellor)	Executive (technical manager)	Clerk (storekeeper)	Retired (former childminder)	Retired (former educator)	Entrepreneur	Retired (former decorator)	Unemployed (on disability)	Retired (farmer)
Condition(s)	Asthma	Anorexia, obsessive compulsive disorder	Epilepsy	Depression	Depression	Ulcerative colitis, vasculitis	Myocardial infarction	Diabetes, stroke	Dysthyroidism, diabetes, hypertension	Diabetes, hypertension, atrial fibrillation	Stroke, hypertension, valve surgery	Diabetes, hypertension, arthrodesis	Multiple sclerosis, sleep apnea	Acute coronary syndrome, hypertension
Place of recruitment	1	1	1	2	2	1	1	1	2	1	1	1	1	1
Version of the questionnaire tested	V3	V3	V3	V3	V3	V3	V3	V4	V4	V4	V4	V5	V5	V5

1: rural medical practice; 2: urban pharmacy

to test the addition of a "parcours de soins" definition, that was inspired by existing literature [36].

Items 4 and 14 were a source of ambiguity or misunderstanding for several patients so were reformulated. In item 4, "mes médicaments étaient connus par ces professionnels de santé" ("*My list of medications was known by these healthcare professionals*") was changed to "ces professionnels de santé savaient quels médicaments je prenais" ("*These healthcare professionals knew what medications I was taking*"). In item 14 "une conduite à tenir était proposée pour la prochaine étape" ("*a course of action was proposed for the next step*") was replaced by "celui-ci avait déjà réfléchi aux soins à me proposer pour ma santé" ("*they had already thought about the care plan to offer me next, for my health*").

Finally, several patients wondered about the expression "ces professionnels de santé" *("these healthcare professionals"*), without making the expected link with the healthcare professionals designated in the checklist preceding the 14 items. The scientific committee proposed changing it to "mes professionnels de santé" *("my healthcare professionals").*

Four interviews were conducted using this new V4 version (Supplementary Material 2B). Several patients mentioned healthcare professionals they had seen more than four months ago so the instructions relating to the checklist of healthcare professionals were revised to better highlight the required 4-month period. Overall, the items seemed to be better understood. The reformulated item 4 seemed clearer, and the "parcours de soins" definition made the meaning of items 5, 6 and 13 more evident. However, for item 14, the understanding seemed improved but moved away from its initial meaning. The scientific committee therefore reformulated this in version V5 (Table 6).

Version V5 was tested with three additional patients (Supplementary Material 2C). They did not identify any residual difficulty. The scientific committee therefore considered this version to be the final version resulting from the cross-cultural adaptation process (Fig. 1C).

Discussion

The objective of this study was to perform cross-cultural adaptation of the validated Quebecois PCCCT questionnaire for use in France. The two-stage method involving both healthcare professional and patient expertise produced a version of the questionnaire aimed at being used in France and which has item and semantic equivalence to the original Quebecois version.

To our knowledge, until now there has not been a simple and valid tool to measure the patient's perspective on patient-centered care coordination by a care team in France. Some of the existing questionnaires only consider the healthcare professionals' perspective or the health system perspective, which do not necessarily reflect the patient's subjective experience of good patient-centered care coordination [37, 38]. Other existing questionnaires consider the patient's perspective but focus on one specific condition such as diabetes or cancer [39–41]. Others evaluate continuity of care which is a concept close to but distinct from that of patient-centered coordination of care [42, 43]. Of the existing non-condition specific questionnaires focusing on the patient's perspective in primary care [25, 44–46], the PCCCT was best suited to our needs since it was concise and simple. It also included three essential elements: 1) the checklist of healthcare professionals involved in the patient's care; 2) the degree of coordination between them; 3) the patient's own problems and objectives.

Having such a tool is necessary for documenting and evaluating the health system reforms and public policies aimed explicitly at improving patient-centered care coordination. When implementing these reforms and policies, the patient's perception of their care experience is an essential element that must be documented and considered.

Our study is in line with the work carried out by the Organization for Economic Cooperation and Development (OECD) as part of the Patient-Reported Indicator Surveys initiative (PaRIS) [47]. In this initiative, several countries, including France and Canada, are working together to develop, standardize and implement a new generation of indicators to measure the healthcare experiences and outcomes that matter most to patients. Ultimately, the PaRIS project will provide access to patient-reported data and leverage for better clinical, managerial, and political decision-making. Therefore, the adapted PCCCT can be used to enrich this patient-reported data about healthcare experiences which is an essential dimension for improving the quality of care according to the five health goals principles [48] These are enhancing population health, improving care experience, reducing costs, limiting burnout among members of the healthcare workforce and advancing health equity.

The psychometric qualities of the French version of the PCCCT questionnaire still need to be evaluated to verify measurement equivalence compared to the original Quebecois version. This step will complete the cross-cultural adaptation process.

We chose to involve both professionals and patients because the two panels have complementary expertise for the adaptation process. The participating professionals reflected various professional skills, practice environments, geographic and linguistic origins, while the patients reflected different care experiences related

Table 6 Comparison of questionnaire's versions and indication of the changes made in the different stages

Item No	V0 Original Quebecois version	V1 Reformulation by the scientific committee	V3 Reformulation after Delphi stage (Rounds 1 and 2)	V5 Reformulation after cognitive interviews stage
1	Je suis confiant que les membres de mon équipe de soins communiquaient entre eux au sujet de mes soins	**Je pense que ces professionnels de santé** communiquaient entre eux au sujet de mes soins. (θ, #)	Je pense que ces professionnels de santé communiquaient **bien** entre eux au sujet de mes soins. (£)	Je pense que **mes** professionnels de santé communiquaient bien entre eux au sujet de mes soins. (§)
2	Je savais qui coordonnait les différents aspects de mes soins	Je savais qui coordonnait **mes soins.** (Ψ)		
3	On m'a informé des services disponibles pour les gens dans une situation comme la mienne	On m'a informé des **ressources** disponibles pour les gens dans une situation comme la mienne **(par exemples: autre professionnel de santé, association…).** (#, £)	On m'a informé **des professionnels ou dispositifs** disponibles pour les gens dans une situation comme la mienne. (£)	
4	Ma liste de médicaments était connue par les membres de mon équipe de soins	**Mes médicaments** étaient connus par **ces professionnels de santé.** (Ψ, #)		**Mes professionnels de santé savaient quels médicaments je prenais.** (§, θ)
5	On me demandait mon avis avant de décider de mon plan de soins	On me demandait mon avis avant de décider de **ma prise en charge.** (#)	On me demandait mon avis avant de décider de **mon parcours de soins**. (§)	On me demandait mon avis avant de décider de mon parcours de soins. **« Parcours de soins»: l'enchainement des soins reçus ou réalisés par un patient pour sa santé. Ces soins peuvent être, par exemple, des consultations avec des professionnels de santé, des examens, des médicaments, des séances de rééducation, une hospitalisation, un accompagnement social, un changement d'habitude de vie (alimentation, activité physique, tabac, etc.).** (£)
6	Je manquais d'information sur la prochaine étape de mon plan de soins	Je manquais d'information sur la prochaine étape de **ma prise en charge.** (#)	Je manquais d'information sur la prochaine étape de **mon parcours de soins.** (§)	Je manquais d'information sur la prochaine étape de mon parcours de soins **« Parcours de soins»: l'enchainement des soins reçus ou réalisés par un patient pour sa santé. Ces soins peuvent être, par exemple, des consultations avec des professionnels de santé, des examens, des médicaments, des séances de rééducation, une hospitalisation, un accompagnement social, un changement d'habitude de vie (alimentation, activité physique, tabac, etc.).** (£)
7	J'avais des mises à jour de ma liste de médicaments avec un membre de mon équipe de soins	Ma liste de médicaments **était contrôlée par un professionnel de santé.** (θ, #)		
8	J'avais un plan d'action pour m'aider à éviter une aggravation soudaine de mon état de santé ou une situation d'urgence	J'avais une **conduite à tenir** pour m'aider à éviter une aggravation de mon état de santé ou une situation d'urgence. (#, Ψ)		

Table 6 (continued)

Item No	V0 Original Quebecois version	V1 Reformulation by the scientific committee	V3 Reformulation after Delphi stage (Rounds 1 and 2)	V5 Reformulation after cognitive interviews stage
9	Je pense avoir reçu l'information dont j'avais besoin de la part de mon équipe de soins	Je pense avoir reçu les informations dont j'avais besoin de la part de **ces professionnels de santé.** (#)		Je pense avoir reçu les informations dont j'avais besoin de la part de **mes** professionnels de santé. (§)
10	Mon équipe de soins m'aidait à comprendre l'information	**Ces professionnels de santé** m'aidaient à comprendre les informations **concernant ma situation.** (#, £)		**Mes** professionnels de santé m'aidaient à comprendre les informations concernant ma situation. (§)
11	J'étais laissé à moi-même pour comprendre l'information	J'étais laissé à moi-même pour comprendre les informations **concernant ma situation.** (£)		
12	Je me sentais écouté par les membres de mon équipe de soins	Je me sentais écouté par **ces professionnels de santé.** (#)		Je me sentais écouté par **mes** professionnels de santé. (§)
13	Quand je rencontrais un autre professionnel, il connaissait mon plan de soins à l'avance	Quand je rencontrais un autre professionnel **de santé**, il **prenait connaissance des principaux éléments de ma prise en charge.** (£, θ, #)	Quand je rencontrais un autre professionnel de santé, il **avait déjà** connaissance des principaux éléments de **mon parcours de soins.** (θ, §)	Quand je rencontrais un autre professionnel de santé, il avait déjà connaissance des principaux éléments de mon parcours de soins **« Parcours de soins»: l'enchainement des soins reçus ou réalisés par un patient pour sa santé. Ces soins peuvent être, par exemple, des consultations avec des professionnels de santé, des examens, des médicaments, des séances de rééducation, une hospitalisation, un accompagnement social, un changement d'habitude de vie (alimentation, activité physique, tabac, etc.).** (£)
14	Quand j'allais d'un professionnel ou d'un service à un autre, il y avait un plan en place pour la prochaine étape	**Quand j'étais adressé à un professionnel de santé, une conduite à tenir était proposée** pour la prochaine étape. (θ, #)		Quand j'**allais d'**un professionnel de santé **à un autre, ils avaient des propositions de soins à me faire pour la suite.** (θ, §, £)

Text modifications are marked in bold, and accompanied by one or more symbols, indicating the type of change made:

θ simple linguistic change

adaptation to the French healthcare system

£ precision

§ return to the original meaning

Ψ simplification

to their gender, age, socio-professional category and somatic and/or mental health problems.

The study was implemented with few deviations from the pre-established protocol and with excellent involvement of all participants. Especially, patients' participation in cognitive interviews faced few barriers, they appear to appreciate feeling concerned and sharing their care experience during this study that was not very binding and time-consuming. However, there were no patients older than 80 years since the two patients in this age group who agreed to participate were not able to do so, as discussed previously. It would have been beneficial to have more elderly participants since multimorbidity is particularly prevalent in this age group meaning patient-centered care coordination is particularly relevant to them.

As concerns the Delphi stage, the integration of patients in this step could have sped up the adaptation process since the patient's opinions would have been considered earlier, while the participation of a language expert could have made a complementary contribution and provided a relevant point of view on the interpretation and reformulation of the questionnaire. In addition, we made a conscious choice not to share in round 2 the experts' comments from round 1. We considered that sharing this information would have impacted the experts' responses, while our study relied heavily on the personal understanding of the items and their subjective interpretation. However, this choice may have contributed to not reaching consensus on all items at the end of the Delphi stage.

The study took place in a single region of France, taking care to recruit patients from two different care settings and two distinct departments to ensure regional diversity. Conducting the interviews by telephone limited the collection of certain data, particularly non-verbal communication such as facial expressions indicating incomprehension or hesitation. Using a video call may have helped with this but it was not used as some patients did not have or were reluctant to use the required technology, especially the elderly and those living in rural areas. It was decided to use the same media for all the participants. Furthermore, the instruction not to look at the questionnaire before the interview had not always been respected. Patients who had not confronted certain situations mentioned in the items were unable to respond based on their own experience. In this situation, it was suggested that the patients used the experiences of relatives to assess the level of understanding and response mechanisms.

Conclusions

The adaptation process used in this study means the PCCCT questionnaire may soon be available for use in France, after appropriate studies on equivalence measures will be carried out. This short and easily administered questionnaire can be employed for people with one or more chronic conditions to assesses their perspectives about patient-centered care coordination, particularly in primary care. It is a useful resource for the French health system reforms aimed at promoting more integrated and patient-centered care pathways.

Abbreviations

OECD	Organization for Economic Cooperation and Development
PACEinMM	Patient-Centered Innovations for Persons with Multimorbidity Study
PaRIS	Patient-Reported Indicator Surveys initiative
PCCCT	Patient-Centered Coordination by a Care Team

Supplementary Information

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Supplementary Material 1.

Supplementary Material 2.

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Authors' contributions

ARR, MEP, Study concept and design. SL, AP, Acquisition of data.SL, AP, ARR, MEP, SS, Analysis and interpretation of data. ARR, SL, AP, Drafting of the manuscriptARR, AP, MEP, SS, Critical revision of the manuscript for important intellectual content. ARR, MEP, SS, Supervision.All authors approved the final version of the manuscript.

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Data availability

Most data underlying this study are presented within the manuscript (Tables). Any other data will be shared on reasonable request to the corresponding author.

Declarations

Ethics approval and consent to participate

All methods were carried out in accordance with relevant guidelines. The research was conducted in accordance with the Declaration of Helsinki, with a continuous concern to protect the dignity, integrity and privacy of the participants, including the confidentiality of their data.
The study was approved by the Ethics Committee of Angers University Hospital, Angers, France, on September 1st, 2020, reference number 2020/106. All participants signed an informed consent form about their participation in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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References

1. Rudnicka E, Napierała P, Podfigurna A, Męczekalski B, Smolarczyk R, Grymowicz M. The World Health Organization (WHO) approach to healthy ageing. Maturitas. 2020;139:6–11.
2. Collaborators GDI. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the global burden of Disease Study 2019. Lancet. 2020;396(10258):1204–22.
3. Skou ST, Mair FS, Fortin M, et al. Multimorbidity. Nat Rev Dis Prime. 2022;8(1):48.
4. Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. Lancet. 2012;380(9836):37–43.
5. Mercer S, Salisbury C, Fortin M. ABC of Multimorbidity. Oxford: Wiley-Blackwell; 2014.
6. Tran VT, Barnes C, Montori VM, Falissard B, Ravaud P. Taxonomy of the burden of treatment: a multi-country web-based qualitative study of patients with chronic conditions. BMC Med. 2015;13:115.
7. Belche JL, Berrewaerts MA, Ketterer F, Henrard G, Vanmeerbeek M, Giet D. From chronic disease to multimorbidity: what is the impact on health care organization? Presse Med. 2015;44(11):1146–54.
8. Valderas JM, Mercer SW, Fortin M. Research on patients with multiple health conditions: different constructs, different views, one voice. J Comorb. 2011;1:1–3.
9. McDonald KM, Schultz E, Albin L, et al. Care Coordination measures Atlas Version 4. AHRQ Publication No. 14-0037- EF. Rockville: Agency for Healthcare Research and Quality; 2014.
10. McDonald KM, Sundaram V, Bravata DM, al. Closing the quality gap: a critical analysis of quality improvement strategies. (Vol 7: Care Coordination). Rockville : Agency for healthcare research and quality; 2007.
11. Poitras ME, Maltais ME, Bestard-Denommé L, Stewart M, Fortin M. What are the effective elements in patient-centered and multimorbidity care? A scoping review. BMC Health Serv Res. 2018;18(1):446.
12. Stewart M. Towards a global definition of patient centred care. BMJ. 2001;322(7284):444–5.
13. Stewart M, Brown JB, Weston W, McWhinney IR, McWilliam CL, Freeman T. Patient-centered medicine: transforming the clinical method (3rd ed). London: CRC Press. 2013.
14. Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. J Fam Pract. 2000;49(9):796–804.
15. Burgers JS, van der Weijden T, Bischoff E. Challenges of Research on person-centered care in general practice: a scoping review. Front Med (Lausanne). 2021;8:669491.
16. Park M, Giap TT, Lee M, Jeong H, Jeong M, Go Y. Patient- and family-centered care interventions for improving the quality of health care: a review of systematic reviews. Int J Nurs Stud. 2018;87:69–83.
17. Hassenteufel P, Naiditch M, Schweyer F-X. Reforms of the organization of primary care: multiple perspectives. Foreword. Revue française des affaires Sociales. 2020;1:11–31.
18. Australian Government. Future focused primary health care: Australia's Primary Health Care 10 Year Plan 2022–2032. 2022.
19. Aggarwal M, Hutchison B. Toward a primary care strategy for Canada. Ottawa: Canadian Foundation for Healthcare Improvement; 2012.
20. Xyrichis A, Ream E. Teamwork: a concept analysis. J Adv Nurs. 2008;61(2):232–41.
21. Ray M, Bourgueil Y, Sicotte C. French multi-professional healthcare homes: an organizational model at the interface of multiple logics. Revue française des affaires Sociales. 2020;1:57–77.
22. Breton M, Levesque J-F, Pineault R, Hogg W. L'implantation Du modèle des groupes de médecine de famille Au Québec: Potentiel et limites pour l'accroissement de la performance des soins de santé primaires. Pratiques et Organisation des Soins. 2011;42(2):101–9.
23. Rosser WW, Colwill JM, Kasperski J, Wilson L. Patient-centered medical homes in Ontario. N Engl J Med. 2010;362(3):e7.
24. Stewart M, Fortin M. Patient-centred innovations for persons with multimorbidity: funded evaluation protocol. CMAJ Open. 2017;5(2):E365–372.
25. Ramond-Roquin A, Stewart M, Ryan BL, et al. The patient-centered coordination by a care team questionnaire achieves satisfactory validity and reliability. J Interprof Care. 2019;33(5):558–69.
26. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine (Phila Pa 1976). 2000;25(24):3186–91.
27. Epstein J, Santo RM, Guillemin F. A review of guidelines for cross-cultural adaptation of questionnaires could not bring out a consensus. J Clin Epidemiol. 2015;68(4):435–41.
28. Québec Government. Cadre de gestion des groupes de médecine de famille universitaires (GMF-U). Ministère de la Santé et des Services sociaux. 2017
29. French Government. LOI n° 2019 – 774 du 24 juillet 2019 relative à l'organisation et à la transformation du système de santé. 2019.
30. Soussi A, Broi A-M, Moreau J, Wirthner M. PISA 2000: La littératie dans quatre pays francophones : les résultats des jeunes de 15 ans en compréhension de l'écrit. 2004. https://edudoc.ch/record/3381/?ln=fr.
31. Niederberger M, Köberich S. Coming to consensus: the Delphi technique. Eur J Cardiovasc Nurs. 2021;20(7):692–5.
32. Marshall MN. Sampling for qualitative research. Fam Pract. 1996;13(6):522–5.
33. Willis G. Cognitive interviewing: a tool for improving questionnaire design. 2004.
34. Willis GB, Artino AR. Jr. What do our respondents think we're asking? Using cognitive interviewing to improve medical education surveys. J Grad Med Educ. 2013;5(3):353–6.
35. Tuckett AG. Qualitative research sampling: the very real complexities. Nurse Res. 2004;12(1):47–61.
36. Haute Autorité de Santé. Parcours de soins: questions / réponses. 2012.
37. Salisbury C, Sampson F, Ridd M, Montgomery AA. How should continuity of care in primary health care be assessed? Br J Gen Pract. 2009;59(561):e134–141.
38. Tarrant C, Windridge K, Boulton M, Baker R, Freeman G. How important is personal care in general practice? BMJ. 2003;326(7402):1310.
39. Gulliford MC, Naithani S, Morgan M. Measuring continuity of care in diabetes mellitus: an experience-based measure. Ann Fam Med. 2006;4(6):548–55.
40. King M, Jones L, Richardson A, et al. The relationship between patients' experiences of continuity of cancer care and health outcomes: a mixed methods study. Br J Cancer. 2008;98(3):529–36.
41. Grant M, De Rossi S, Sussman J. Supporting models to transition breast cancer survivors to primary care: formative evaluation of a cancer care Ontario initiative. J Oncol Pract. 2015;11(3):e288–295.
42. Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. BMJ. 2003;327(7425):1219–21.
43. Jee SH, Cabana MD. Indices for continuity of care: a systematic review of the literature. Med Care Res Rev. 2006;63(2):158–88.
44. Zlateva I, Anderson D, Coman E, Khatri K, Tian T, Fifield J. Development and validation of the Medical Home Care Coordination Survey for assessing care coordination in the primary care setting from the patient and provider perspectives. BMC Health Serv Res. 2015;15:226.
45. Haggerty JL, Roberge D, Freeman GK, Beaulieu C, Bréton M. Validation of a generic measure of continuity of care: when patients encounter several clinicians. Ann Fam Med. 2012;10(5):443–51.

46. Singer SJ, Friedberg MW, Kiang MV, Dunn T, Kuhn DM. Development and preliminary validation of the patient perceptions of integrated care survey. Med Care Res Rev. 2013;70(2):143–64.
47. OECD. Patient-Reported Indicator Surveys (PaRIS). https://www.oecd.org/health/paris/. Accessed Feb 2023.
48. Nundy S, Cooper LA, Mate KS. The quintuple aim for health care improvement: a new imperative to advance health equity. JAMA. 2022;327(6):521–2.

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