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Prevalence of clinically significant decisional conflict: an analysis of five studies on decision-making in primary care

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ABSTRACT

Objectives: Unresolved clinically significant decisional conflict (CSDC) in patients following a consultation with health professionals is often the result of inadequate patient involvement in decision-making and may result in poor outcomes. We sought to identify the prevalence of CSDC in studies on decision-making in primary care and to explore its risk factors.

Setting: We performed a secondary analysis of existing data sets from studies conducted in Primary Care Practice-Based Research Networks in Québec and Ontario, Canada.

Participants: Eligible studies included a patient-reported measure on the 16-item Decisional Conflict Scale (DCS) following a decision made with a healthcare professional with no study design restriction.

Primary and secondary outcome measures: CSDC was defined as a score ≥25/100 on the DCS. The prevalence of CSDC was stratified by sex; and patient-level logistic regression analysis was performed to explore its potential risk factors. Data sets of studies were analysed individually and qualitatively compared.

Results: 5 projects conducted between 2003 and 2010 were included. They covered a range of decisions: prenatal genetic screening, antibiotics for acute respiratory infections and miscellaneous. Altogether, the 5 projects gathered data from encounters with a total of 1338 primary care patients (69% female; range of age 15–83). The prevalence of CSDC in patients varied across studies and ranged from 10.3% (95% CI 7.2% to 13.4%) to 31.1% (95% CI 26.6% to 35.6%). Across the 5 studies, risk factors of CSDC included being male, living alone and being 45 or older.

Conclusions: Prevalence of CSDC in patients who had enrolled in studies conducted in primary care contexts was substantial and appeared to vary according to the type of decision as well as to patient characteristics such as sex, living arrangement and age. Patients presenting risk factors of CSDC should be offered tools to increase their involvement in decision-making.

Strengths and limitations of this study

- This study included data on 1338 patients from five studies conducted in primary care contexts in two Canadian provinces, Québec and Ontario.
- To the best of our knowledge, this is the first account of the prevalence of clinically significant decisional conflict (CSDC) as reported in studies conducted exclusively in primary care and with this many unique clinical encounters.
- Our results contradict a common belief that primary care deals only with decisions involving no perception of risk, loss or regret; our study also reports a higher prevalence of CSDC in men than women, in people living alone, and in older patients.
- The fact that measuring CSDC was not the primary objective of any of the selected studies could affect observed results.
- A meta-analysis was not possible given the heterogeneity of the data sets (type of decision, study design, available variables) and thus the difficulty associated with its interpretation.

INTRODUCTION

When facing health-related decisions and presented with multiple options, patients are subject to uncertainty about what to choose. This uncertainty is known as decisional conflict. Decisional conflict is an intrapersonal psychological construct that is felt by individuals when facing decisions that involve risk, loss, regret or challenges to personal life values.[1 2] In lay terms, decisional conflict reflects the level of comfort that an individual faces in making a decision. In some patients, it may translate into clinically significant decisional conflict (CSDC), at which point decisional conflict is positively associated with decisional delay, departure from active treatment, decision regret, nervousness and a higher intention to sue physicians in

cases of harms from treatment.[3 4] Thus, it is essential to identify patients experiencing CSDC, as there are several modifiable deficits that lead to CSDC, including (1) inadequate knowledge of options; (2) unclear values regarding harms and benefits of options and (3) inadequate support or resources for decision-making. These may all be addressed with effective decision support.[5] In primary care, the gateway to the healthcare system, decisional conflict is particularly relevant. The majority of healthcare problems are treated in primary care, providing care focused on the individual and his or her context for all but very uncommon or unusual conditions. Primary care physicians provide continuity of care and coordinate or integrate the care provided by other levels of the system or by other professionals.[6] A greater emphasis on primary care is expected to lower the costs of care, improve health and reduce inequalities in the sphere of population health. However, primary care is also the context in which costly and harmful overuse of treatment or screening options is most prevalent, and therefore an area where decision-making requires urgent improvement. It is also a context in which the available evidence is often equivocal; goals are often ill-defined; and decision-making is subject to structural, organisational and time pressures.[7–9] These difficulties can be addressed successfully with effective decision support.[5] For example, patient decision aids have proven to be effective in reducing overuse of inappropriate treatments,[10] and in resolving CSDC following the decision-making process.[11 12] Analysing and comparing the outcomes of studies measuring decisional conflict among primary care patients could thus have a widespread impact on implementations to support optimal healthcare decisions and lead to improvement in quality of care for a large number of individuals. We therefore explored the magnitude of this phenomenon by determining the prevalence of CSDC in studies conducted in primary care contexts and their risk factors.

METHODS

Source of data and participants

We carried out a secondary analysis of existing data sets from studies conducted within or in collaboration with the Laval University Primary Care Practice-Based Research Network (PBRN) in the Province of Québec, Canada. This network comprises 12 family practice teaching units affiliated with Laval University and collaborates with other research networks nationally and internationally.[13] We screened the Laval University PBRN for potentially eligible studies and considered all patient data gathered from five eligible studies. Studies were included if (1) they were set entirely in primary care (defined as the patient's point of entry into the healthcare system, most often consulting a family physician[14]); (2) they assessed patient-reported decisional conflict using the French or English version of the 16-item Decisional Conflict Scale (DCS; ie, studies conducted after the development of the DCS in 1993)[15] and (3) DCS scores were collected from patients following a clinical encounter with a primary care provider. There was no study design restriction. Studies were excluded if data had been gathered in a specialised clinic, if participants were recruited from the public (through newspaper ads, for instance), or if data collected with individuals did not relate to a clinical encounter with a primary care provider. For experimental studies, only patients from control or baseline groups were considered for analysis. Each of the projects from which data were extracted had been granted ethical approval by its respective institution. For this secondary analysis, all nominal data were redacted and none of the variables could be associated with individuals. Therefore further ethics approval was not required.

Data collected

All data collected with patients enrolled in the included studies had been collected using self-administered paper-based questionnaires. The DCS is a generic 16-item scale developed to provide an instrument to evaluate or adapt decision aids and other decision support interventions to patient needs.[16] When administered in the context of the included studies, a preamble described the specific decision type addressed, and patients were asked to indicate clearly in their own words the decision they were assessing. Therefore, the DCS items were generic and the same in every case, and participants were thus expected to respond in light of this one specific decision. From the baseline data (ie, before-and-after or randomised controlled trial studies), we extracted the following characteristics of each study: year of data collection, study type, main objective of original study, clinical setting and types of decision(s) made by patients. For each study, we assessed patient characteristics such as sex, age (<45, ≥45 years), professional status (full-time or part-time employment, no employment, retired), education (no postsecondary education, some postsecondary education), annual household income (<$C60 000, ≥$60 000), household size (living alone, living with at least one other person), marital status (married, single, separated/divorced, widowed) and whether the patient had a private drug insurance plan (yes, no). We also assessed clinical characteristics: whether this was the first encounter with that particular primary care provider (yes, no), whether the patient was accompanied during the encounter (yes, no), whether the decision was for a child (yes, no), patient preference for involvement in decision-making (passive, active[10 17]), average annual frequency of consultations with any doctor (≤3, >3), self-reported health status[18] (excellent/very good/good, or fair/poor), whether the patient received a drug prescription (yes, no).

Data analysis

First, we computed CSDC as defined by a score of ≥25/100 on the DCS,[3 4 15 19] at which point decisional

conflict is positively associated with decisional delay, departure from active treatment, decision regret, nervousness and a higher intention to sue physicians in cases of harms from treatment.[3 4] This is the threshold most commonly used to distinguish a harmless from a harmful level of decisional conflict.[3 19 20] The DCS consists of 16 items, each of which is measured on a five-point Likert scale (1=strongly agree to 5=strongly disagree, treated as a 0–4 score). The mean score of all items is multiplied by 25 to give a score out of 100. Higher scores indicate higher levels of decisional conflict.[21] The DCS shows good psychometric properties (test–retest reliability coefficient: 0.81, Cronbach's α range 0.78–0.92) and its French translation has been validated.[16 22–24] Second, we conducted complete-subject analyses of the prevalence and risk factors of CSDC individually for each data set at the patient level. After deletion of missing data and removal of participants in experimental groups, patient characteristics were similar to those of the original study populations.[25–29] In studies where clusters of patients were recruited under the same clinician and/or within the same clinic, we assessed the impact of a potential cluster effect at each level of analysis (clinician and/or clinic). For each data set, we computed overall prevalence of CSDC and prevalence for each category of available variables stratified by sex. All results pertaining to prevalence are reported as percentages of patients with CSDC. Logistic regression (backwards selection) was used to explore the independent association between CSDC and potential risk factors, including interaction terms with each variable and sex. All significant variables at $\alpha \leq 0.10$ were kept in the final model. We defined statistical significance at $\alpha \leq 0.10$ because this was an exploratory study. If we found a non-negligible cluster effect, we used a generalised estimation equation (PROC GENMOD) with binary logit outcome. Otherwise, logistic regression was used. We calculated the receiver operating characteristic to estimate the models' performance. All analyses were conducted with SAS V.9.3 (SAS Institute, Cary, North Carolina, USA).

RESULTS

Description of included studies

We estimated the prevalence of CSDC in the context of five different studies conducted in primary care. Each of these studies was designed to address different issues, and each collected quite different data. However, each study group had independently identified the need to measure decisional conflict using the DCS.[16] The following is a short description of included studies.

The first study was a before-and-after trial conducted in Québec to assess the impact of implementing the Ottawa Decision Support Framework (ODSF) on correspondences between patients' and physicians' decisional conflict scores. Implementation of the framework consisted of an interactive workshop, feedback and a reminder at the point of care. Secondary objectives were to evaluate the barriers and facilitators to implementation of the ODSF in primary care practices and examine changes in physicians' intention to adopt the DSC.[26]

The second study evaluated decisional conflict in the context of prenatal screening for Down syndrome (GENETIC). This cross-sectional survey conducted with patients from Québec assessed the willingness of women and their family physicians to engage in shared decision-making about prenatal Down syndrome screening and factors that might influence this willingness.[27]

The third study evaluated the impact of a training programme for physicians (DECISION+).[25] This pilot randomised controlled trial conducted in Québec integrated multiple educational/behavioural change components that aimed to promote shared decision-making about treatment options and specifically about the use of antibiotics for acute respiratory infections.[25]

The goal of the fourth study was to assess the psychometric properties of dyadic measures for shared decision-making research. The study used a shared decision-making model (EXACKTE2) to explore how patients and clinicians influence one another. This cross-sectional study conducted in 17 primary care clinics in Ontario and Québec explored the mutual influence between patients and physicians during consultations.[28]

The last study used data gathered during a pilot study[25] to establish the feasibility of conducting the DECISION+ training programme on a larger scale. The programme was improved and renamed DECISION+2[29] before the definitive trial. This randomised controlled trial conducted in Québec assessed the impact of DECISION+2 on antibiotics use for acute respiratory infections.

Table 1 presents the characteristics of the included studies and their related data sets alongside the available independent variables.[25–29] All data sets were from projects conducted between 2003 and 2010. Four were conducted in the province of Québec and one was conducted jointly by teams from Ontario and Québec.[28] Of the five data sets available, two were clustered randomised trials (DECISION+,[25] DECISION+2[29]), two were cross-sectional surveys (GENETIC,[27] EXACKTE2[28]) and one was a before-and-after trial (iODSF[26]). Decisions were about undergoing a prenatal Down syndrome genetic screening test (GENETIC[27]), taking antibiotics to treat acute respiratory infections (DECISION+,[25] DECISION+2[29]) and various other primary care decisions (iODSF,[26] EXACKTE2[28]). Altogether, data from 1338 primary care patients were analysed. Patients were aged between 15 and 83 years and 69% were female.

Prevalence of CSDC

Table 2 shows the prevalence as a percentage of included participants with CSDC across all five data sets stratified by sex for available variables, since gender was found to be a modifying factor for at least one variable

Table 1 Characteristics of data sets

Characteristics	Data set				
	iODSF[26]	GENETIC[27]	DECISION+[25]	EXACKTE2[28]	DECISION+2[29]
Year of data collection	2003	2007	2007	2009	2010
Study type	Before and after trial	Cross-sectional survey	Cluster randomised trial	Cross-sectional survey	Cluster randomised trial
Main objective of study	To assess the impact of implementing the ODSF on correspondences between patients' and physicians' decisional conflict scores	To assess the willingness of women and their family physicians to engage in shared decision-making about prenatal Down syndrome screening and the factors that might influence this willingness	To develop, adapt and validate a shared decision-making training programme and estimate its impact on the decision of family physicians and their patients about whether to use antibiotics for ARIs	To assess the psychometric properties of dyadic measures for shared decision-making research	To evaluate the effect of a shared decision-making training programme on decisions of family physicians and their patients about whether to use antibiotics for ARIs
Clinical setting	5 FPTUs in the Québec City area	3 FPTUs in the Québec City area	4 family medicine groups in the Québec City area	17 primary care clinics in the Québec City area and in Ontario	9 FPTUs in the province of Québec
Type of decision	Various other primary care decisions	To do a prenatal test or not	To take antibiotics or not for treating ARIs	Various other primary care decisions	To take antibiotics or not for treating ARIs
Total participants (N)	370	130	225	198	415
Women; n (%)	234 (63)	130 (100)	154 (68)	131 (66)	277 (67)
Aged ≥45 years; n (%)	209 (56)	0 (0)	60 (27)	117 (59)	164 (40)
Living by themselves; n (%)	119 (32)	1 (1)	39 (17)	42 (21)	74 (18)
Professional status; n (%)					
Employed full time or part-time	185 (50)	105 (81)	176 (78)	109 (55)	318 (77)
Unemployed	69 (19)	25 (19)	36 (16)	30 (15)	65 (16)
Retired	116 (31)	0 (0)	13 (6)	59 (30)	32 (7)
Household income ≥$60 000; n (%)	97 (26)	62 (48)	87 (39)	24 (12)	194 (47)
Available variables	Age, sex, employment status, education, annual income, household size, first encounter with that doctor	Age, sex, employment status, education, annual income, household size	Age, sex, employment status, education, annual income, household size, first encounter with that doctor, patient preference for involvement in decision-making, self-reported health status, whether making a decision for a child, whether patient receives a prescription, whether patient has a private drug insurance plan	Age, sex, employment status, education, annual income, household size, marital status, average annual frequency of physician visits, first encounter with that doctor, patient is alone or accompanied	Age, sex, employment status, education, annual income, household size, first encounter with that doctor, patient preference for involvement in decision-making, self-reported health status, whether making a decision for a child, whether patient receives a prescription, whether patient has a private drug insurance plan

ARIs, acute respiratory infections; FPTU, family practice teaching unit; ODSF, Ottawa Decision Support Framework.

Table 2 Prevalence* of clinically significant decisional conflict according to data sets and sex

	iODSF[26]			GENETIC[27]	DECISION+[25]			EXACKTE2[28]			DECISION+2[29]		
	F	M	All	All†	F	M	All	F	M	All	F	M	All
Total participants (N)	234	136	370	130	154	71	225	131	67	198	277	138	415
Overall prevalence (95% CI)	7.7 (4.3 to 11.1)	14.7 (8.7 to 20.7)	10.3 (7.2 to 13.4)	16.9 (10.4 to 23.5)	17.5 (11.5 to 23.6)	31.0 (20.0 to 42.0)	21.8 (16.3 to 27.2)	15.3 (9.0 to 21.5)	28.4 (17.3 to 39.4)	19.7 (14.1 to 25.3)	28.5 (23.2 to 33.9)	36.2 (28.1 to 44.4)	31.1 (26.6 to 35.6)
Adjusted Cronbach's α rates (DCS)	0.85			0.93	0.91			0.95			0.93		
Sociodemographic characteristics													
Age													
<45 years	6.1	13.0	8.1	16.9	11.5	27.0	16.4	10.9	17.7	12.4	26.0	29.2	26.9
≥45 years	9.2	15.6	12.0	NA	34.2	42.1	36.7	19.4	32.0	24.8	36.2	50.0	41.5
Professional status													
Full-time or part-time employment	9.3	14.9	11.4	18.1	17.7	28.1	21.0	10.8	25.7	15.6	27.6	37.0	30.8
No employment	6.0	0.0	4.4	12.0	11.5	50.0	22.2	18.2	25.0	20.0	29.8	27.8	29.2
Retired	6.1	20.0	12.1	NA	33.3	25.0	30.8	22.9	33.3	27.1	35.0	41.7	37.5
Education													
No postsecondary education	5.9	14.4	9.1	9.8	16.0	34.7	23.4	26.0	21.4	24.4	26.3	33.3	28.9
At least some postsecondary education	11.1	15.2	12.6	21.5	19.0	22.7	19.8	8.7	33.3	16.7	29.4	37.8	32.1
Annual household income													
<$60 000	5.1	13.3	8.1	17.7	14.1	41.3	23.2	15.0	24.1	17.8	32.3	30.3	31.7
≥$60 000	15.3	18.4	16.5	16.1	22.6	12.0	19.5	18.2	46.1	33.3	23.8	41.7	30.4
Household size													
Living alone	9.2	23.3	14.3	0.0	31.8	47.1	38.5	25.0	36.4	31.0	42.9	40.0	41.9
Living with ≥1 other person	7.0	10.8	8.4	17.1	15.2	25.9	18.3	13.5	24.4	16.7	25.4	35.4	28.7
Marital status													
Married								9.3	25.0	13.9			
Single								25.0	27.8	26.2			
Separated/divorced								33.3	44.4	38.1			
Widowed								22.2	25.0	23.1			
Private drug insurance plan													
Yes					17.5	26.0	20.1				26.3	35.6	29.4
No					17.5	42.9	26.2				34.2	37.8	35.3
Clinical characteristics													
First encounter with that particular doctor													
Yes	8.5	18.6	12.8		12.5	31.8	17.4	17.8	36.4	23.5	32.6	25.9	30.1
No	7.4	12.9	9.3		21.1	31.6	24.5	15.7	24.4	18.4	27.7	38.7	31.3

Continued

Table 2 Continued

	iODSF[26]			GENETIC[27]	DECISION+[25]			EXACKTE2[28]			DECISION+2[29]		
	F	M	All	All†	F	M	All	F	M	All	F	M	All
Patient accompanied during encounter													
Yes								11.1	33.3	18.5			
No								15.9	27.6	19.9			
Decision for a child													
Yes					10.0	31.2	15.2				22.9	30.0	25.0
No					21.2	30.9	24.5				30.4	38.0	33.0
Patient preference for involvement													
Passive					15.2	30.4	20.3				27.8	26.7	27.3
Active					21.0	32.0	24.1				28.6	37.4	31.4
Average annual frequency of physician visits													
≤3 average physician visits per year								9.9	39.4	19.2			
>3 average physician visits per year								21.7	17.7	20.2			
Self-reported health status													
Excellent, very good, good					16.7	27.4	19.9				27.5	32.8	29.2
Fair, poor					30.0	55.6	42.1				40.9	69.2	51.4
Patient received a prescription													
Yes					16.4	32.8	21.7				29.5	34.6	31.1
No					23.1	20.0	22.2				24.5	42.9	30.9

*Prevalence of clinically significant decisional conflict was defined as a score ≥25/100 on the DCS.[15]
†In the GENETIC study, all participants were female.
DCS, Decisional Conflict Scale; F, female; M, male; NA, not applicable; ODSF, Ottawa Decision Support Framework.

in all four data sets that included men. Prevalence was between 10.3% (iODSF;[26] 95% CI 7.2% to 13.4%) and 31.1% (DECISION+2;[29] 95% CI 26.6% to 35.6%). CSDC was consistently more prevalent in males (4/4 studies), people aged 45 or older (4/4 studies), people living alone (4/5 studies), retirees (4/4 studies), people preferring active participation in decision-making (2/2 studies), people reporting poor health status (2/2 studies), people making the decision for themselves as opposed to for their children (2/2 studies) and people who did not have a private drug insurance plan (2/2 studies).

Risk factors of CSDC

The impact of cluster effect at the clinician level was found to be negligible in all data sets. However, we found a cluster effect at the clinic level in three projects (iODSF,[26] DECISION+,[25] DECISION+2[29]). Table 3 presents the multivariable regression analysis of the association between CSDC and its potential independent risk factors. Sex was found to be a modifying factor for at least one variable in all data sets (except GENETIC,[27] as all participants were women) and an independent risk factor in one (EXACKTE2[28]). We tested the interaction between the patient's gender and the first visit with a physician but found that it was not significant (data not shown). Living alone was positively associated with CSDC in three out of four data sets (iODSF,[26] DECISION+,[25] DECISION+2[29]). Being aged 45 or older was also positively associated with CDSC in three out of four data sets (DECISION+,[25] EXACKTE2,[28] DECISION+2[29]) and there was a significant interaction with sex in one data set (iODSF[26]). An annual income above or equal to $C60 000 was positively associated with CSDC in two of the five data sets (iODSF,[26] EXACKTE2[28]) and we observed an interaction term with sex in one data set (DECISION+[25]). Other study variables were not significantly associated with CSDC in more than one study.

DISCUSSION

Using data on a total of 1338 patients from a combination of five studies conducted in primary care contexts in two Canadian provinces, Québec and Ontario, we observed that the prevalence of CSDC in patients, defined as a score of ≥25/100 on the DCS, was substantial and varied between 10% and 31%. Populations at risk of CSDC included males, people living alone and people aged 45 years or older. To the best of our knowledge, this is the first account of the prevalence of CSDC as reported in studies conducted exclusively in primary care and with this many unique clinical encounters. None of the earlier studies measuring CSDC in a primary care clinical context focused on a decision dealt with entirely at the primary care level.[30–33] Our results lead us to make four main observations.

First, our results contradict a common belief that primary care only deals with mundane types of decisions that involve no perception of risk, loss, regret or challenges to personal life values, and that primary care decisions therefore involve no personal uncertainty. Clearly, this is not how some patients enrolled in these five studies saw the issues they were confronting. Given the harmful downstream effects of unresolved CSDC, our results suggest that a significant number of primary care patients would benefit greatly from patient decision aids,[12] decision coaching[34] or from their healthcare providers being trained in shared decision-making. These clinical approaches are known to be effective in resolving CSDC.[35]

Second, we observed a higher prevalence of CSDC in men than in women in all four data sets that included men and women. Moreover, sex was found to be an independent risk factor in one data set and significantly interacted with at least one variable in all data sets. This may be explained by the fact that more women than men report having a regular family doctor[36] and consulting primary care providers over their lifetime.[37] Women tend to consult healthcare providers more frequently due to their gynecological and obstetrical needs and also because they are often involved in health-related decision-making for other family members.[37 38] Furthermore, physicians are known to discuss therapeutic and preventive interventions more often with women than with men.[39] Together, more visits to physicians and more discussion with them may contribute to a higher sense of self-efficacy among women about engaging in decision-making.[40] This in turn could reduce CSDC in women.[40] Since sex was not an independent risk factor across all studies, it would be erroneous to conclude that men are systematically more at risk of CSDC than women. As in earlier studies on the impact of sex on outcomes, our results highlight a significant effect of sex on CSDC and suggest that primary care providers should tailor their decision-making approach to the patient's sex.[41]

Third, people reporting living alone showed a consistently higher prevalence of CSDC than people reporting living with at least one other person. This is congruent with the theory underlying the DCS.[16] The higher prevalence of CSDC in people reporting living alone could be due to a lack of social support when they face health-related decisions, one of the key contributors to CDSC.[5] During the clinical encounter, primary care providers should explore the patient's social support systems, that is, whether he/she can (1) check other people's opinions, (2) focus on those whose opinions matter most (physician, family and friends) and (3) handle diverse sources of pressure.[42] Such support-clarification exercises help patients understand other perspectives and gather opinions about what other people would do if they were in the same situation. Our results suggest that lack of support for people living alone may aggravate CSDC in primary care patients. Although the contribution of family members is increasingly recognised as an important source of social support for patients facing health decisions,[43] the

Table 3 Association between clinically significant decisional conflict and potential risk factors according to data set

	Data set									
	iODSF[26]		GENETIC[27]		DECISION+[25]		EXACKTE2[28]		DECISION+2[29]	
Potential risk factors	**β±SE**	**p Value**	**β±SE**	**p Value**	**β±SE**	**p Value**	**β±SE**	**p Value**	**β±SE**	**p Value**
Sex (being male)	−0.54±0.58	0.36	n=0		−0.35±0.56	0.54	1.45±0.56	**0.01**	0.39±0.25	0.11
Postsecondary education	–		0.93±0.54	0.08	–		−0.79±0.43	0.07	–	
Age (≥45)	0.66±0.57	0.25	n=0		1.02±0.24	**<0.0001**	0.57±0.45	0.09	0.61±0.18	**<0.001**
Age (≥45)×sex	1.40±0.39	**<0.001**	NA		–		–		–	
Living alone	1.01±0.23	**<0.0001**	n=1		0.81±0.25	**<0.01**	–		0.40±0.17	0.02
Making the decision for a child (vs for self)	NA		NA		−0.73±0.39	0.06	NA		–	
Making the decision for a child (vs for self)×sex	NA		NA		1.20±0.19	**<0.0001**	NA		–	
Having received a prescription	NA		NA		−0.66±0.25	**<0.01**	NA		–	
Having received a prescription×sex	NA		NA		1.93±0.10	**<0.0001**	NA		–	
Annual family income ≥$60K	1.16±0.13	**<0.0001**	–		1.19±0.24	**<0.0001**	1.11±0.56	**0.05**	–	
Annual family income ≥$60K×sex	–		NA		−2.54±0.69	**<0.001**	–		–	
Being unemployed	−0.89±0.31	**<0.01**	–		–		–		0.15±0.42	0.71
Being unemployed×sex	–		NA		–		–		−0.98±0.22	**<0.0001**
Retirement	−0.86±0.44	**0.05**	n=0		–		–		−0.34±0.49	0.49
Being retired×sex	1.83±0.69	**<0.01**	NA		–		–		0.16±0.76	0.83
Being single (vs being married)	NA		NA		NA		1.16±0.54	**0.03**	NA	
Being separated or divorced (vs being married)	NA		NA		NA		0.22±0.74	0.76	NA	
Self-reported health status 'excellent', 'very good' or 'good'	NA		NA		–		NA		−0.95±0.28	**<0.001**
Consulting a physician >3 times a year	NA		NA		NA		0.39±0.55	0.48	NA	
Consulting a physician >3 times a year×sex	NA		NA		NA		−1.92±0.81	**0.02**	NA	
ROC	0.73		0.60		0.76		0.75		0.62	

β, regression coefficient; NA, not available; ODSF, Ottawa Decision Support Framework; ROC, receiver operating characteristic.

literature has still not adequately addressed its full impact on decision-making.[44] Primary care providers should pay closer attention to their patients living alone in their efforts to detect CSDC during the decision-making process.

Lastly, patients aged 45 or older showed a higher prevalence of CSDC in all relevant data sets. As older adults tend to seek less information when making a decision, defer the decision more often and are generally more risk avoidant than young adults, they may be more at risk of CSDC.[45] In addition, an enduring myth among healthcare providers is that older and more vulnerable patients are less interested in participating in decision-making with their healthcare providers than are less vulnerable patients.[46] Any and all of these reasons may contribute to the higher prevalence of CSDC observed in populations aged 45 years or older and should inform clinicians and researchers of the urgent need to foster the participation of older patients in decision-making with the appropriate strategies.

Our study has some limitations. First, measuring CSDC was not the primary objective of any of the selected studies. Also, potentially relevant variables such as marital status and self-reported health status were missing in some data sets, and therefore we could not draw conclusions relating to these variables. Furthermore, all studies were weighted equally, as a meta-analysis was not judged appropriate given the heterogeneity of the data sets (type of decision, study design, available variables). Nevertheless, the similar nature of the questionnaires in each study enabled us to compare associations in data sets independently from one another and thus assure external validity of the results. We also acknowledge that there might be a selection bias in the included studies and thus our results will need to be reproduced in future studies.[47] Also, there might be bias within the studies resulting from patients who willingly participated in the study and regarding the study design. However, we performed multivariate analyses to adjust for confounding factors. Finally, we acknowledge that we cannot infer that our results are generalisable to the wider population as we drew on secondary analysis of existing data sets of studies conducted in specific primary care clinical contexts in two provinces in Canada. Further studies with appropriate survey methods and sampling frames could depict a more accurate portrait of CSDC in other primary care clinical contexts, and explore how much the prevalence varies according to decision type.

CONCLUSION

We observed that the prevalence of CSDC in studies on decision-making conducted in primary care contexts in two Canadian provinces, Québec and Ontario, ranged from 10% to 31%. This prevalence varied depending on the type of decision and was higher in males, in people living alone and in people aged 45 or older. Although we cannot generalise our results to the wider population, they should alert primary care providers to patients who may be at higher risk of CSDC. Training health professionals to identify CDSC in patients and ensuring that effective decision support interventions such as patient decision aids are implemented at the point of care should be encouraged to resolve CDSC.[12 48]

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