ORIGINAL ARTICLE

Impact of payment methods on professional equity of physicians

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Abstract

Background: Professional equity, evaluation of own contributions and received rewards compared to contributions and rewards of other physicians has not been assessed according to payment methods. The aim of this study is to compare levels of professional equity among physicians paid by fee-for-service (FFS), alternative payment plans (APPs), and blended schemes.

Methods: In 2011, medical practitioners in the Saskatoon Health Region, Saskatchewan, were surveyed using a questionnaire developed for physicians to measure professional equity. Intangible rewards were measured by the dimensions of fulfilment and recognition, and tangible rewards by the dimension of income. The three-dimensional structure of the questionnaire was first corroborated through a confirmatory factor analysis (CFA). Analyses of variances were then performed to account for differences in the levels of professional equity. A linear regression model predicting levels of professional equity was used to test the interaction between specialty and payment method, controlling by number of patients, gender, and age group.

Results: In total, 382 (48.1%) physicians participated: 35.6% were family/general practitioners (FPs); 61% were clinical/surgical specialists; and, 3.4% were pathologists. The internal structure of the questionnaire was confirmed by the CFA. Physicians paid by FFS perceived lower professional equity than those paid by APP (p = .005). Practitioners under APPs reported higher levels of income (p = .03) and recognition (p = .001) equity than those with FFS. FPs perceived lower fulfilment (p = .003) and income (p = .008) equity compared to medical-surgical specialists. Furthermore, controlling by number of patients seen per week, higher levels of professional equity are predicted among FPs paid by APPs and blended schemes in comparison to FPs paid by FFS.

Conclusions: Higher levels of professional equity were perceived among physicians paid by APPs in comparison to those paid by FFS. Physicians paid by APPs considered that they are receiving fair economic rewards and appropriate recognition. In addition, enhanced levels of professional equity could be predicted among FPs with APPs and blended schemes. APPs could be explored to improve the professional equity of FPs and, indirectly, promote improved primary health care.

Key words

Physicians, Professional equity, Questionnaire, Payment, Fee-for-service, Alternative payment plans

1 Background

Motivation is the psychological process of "conscious or unconscious stimulus, incentives, or actions towards a goal" [1]. Health care professionals are motivated by both extrinsic and intrinsic factors [2]. Physicians do not automatically respond to financial incentive schemes [3]–an extrinsic factor–as they are influenced considerably more by intrinsic factors of medical practice, such as interaction with patients [4], professional autonomy [5] and achievement [6]. Consequently, complex motivational sources among physicians need to be understood. The use of professional equity theory could facilitate understanding of perceived fairness between efforts and rewards in the practice of medicine.

Professional equity theory [7] argues that individuals evaluate their own contributions (inputs) and rewards received (outputs) compared to the inputs and outputs of "referent others" within the same organization or in other organizations with similar conditions. A perception of imbalance between contributions and rewards leads to professional inequity and tension within a person, who is then likely to be motivated to adjust imbalances [1]. An individual will attempt to restore a state of professional equity when her/his rate of inputs and outputs becomes the same as the rates of others [7]. This scenario underlines the relevance of payment methods on professional equity; however, this perception has not been assessed according to payment methods among physicians. In a continuum of payment methods according to units of aggregation, fee-for-service (FFS) represents the least aggregated end, where a payment is made per each service, procedure, or visit; while, salary represents the most aggregated end, paying per time for a complete range of medical services to patients. Also, capitation is a well-known intermediate payment example, where periodic payments are made per patient for a broad range of health services [8]. Alternative payment plans (APPs)–such as salary, capitation, among others–represent varying degrees of aggregation. Since the satisfaction of different medical specialists has been associated with patient interactions, payment methods that encourage duration and quality of time in the provision of patient care are recommended instead of FFS schemes [4].

Traditionally, physicians in North America have been paid by FFS for the provision of care; however, concerns about the negative effects on the health care system and its providers have been raised. In the United States (US), FFS has been considered as a contributory factor to the fragmentation of health care among Medicare beneficiaries, as well as to the high cost and the poor quality of health care [9]. There is a call for a transition from this volume-based payment method, FFS, to value driven payment alternatives to support innovative health care delivery models [10]. Indeed, the US Affordable Care Act includes models of health care intending to move from FFS payment of physicians to alternative or blended methods [11]. In Canada, FFS has been recognized as an important factor in increasing health care cost, accounting for more than half of the average annual growth in physician spending between 1998 and 2008 [12]. During the last two decades APPs have been implemented across Canada [13, 14]; as a result, APPs represented a quarter of the total payment for physicians by 2010 [13].

Family physicians paid by APPs have been found to see less patients but devote more time on direct patient care outside the office and on indirect patient care [15, 16]. Also, given that lower levels of satisfaction [17, 18] and income disparities [19] have been described among family/general practitioners (FPs) in comparison with other specialists, it is pertinent to evaluate differences in the perceptions of professional equity among physicians, comparing FPs and other specialists paid by different payment schemes.

FPs play a fundamental role in health care systems, and adequate levels of professional equity among them are critical. Since physicians are called to understand the patient and her/his context in order to adequately treat a person with a disease [20], models ensuring a continuum of care will facilitate physicians to have a comprehensive knowledge about their patients. Models of care that reduce the gap between primary and hospital care need to be explored. For instance, a triangular model with FPs as health care leaders has been developed in Castelfiorentino (Tuscany, Italy) [21] where hospitalists and primary care physicians are coordinated in a patient-centered care model, supported by an academic physician who acts as facilitator and educator. Accountable Care Organizations (ACOs) in the US provide another example of a patient-centered care model. The ACOs are integrated networks of physicians assuming the responsibility for providing care to a defined patient population, where rewards are based on quality of care and implemented by value

driven payment methods [10, 11, 22, 23]. FPs should be leaders in the development and implementation of these and other novel health care models. Alternative and blended payment methods could be central in promoting professional equity among FPs and to support the expansion of innovative health care models. Therefore, professional equity of FPs has to be particularly measured, followed, and enhanced during this critical process.

An instrument designed to measure the perception of professional equity, specifically for physicians, was developed and tested by Dobson, Lepnurm and Struening [24] across Canada. This instrument could be used to measure professional equity and make comparisons among physicians. However, the authors of this instrument suggested that the questionnaire might benefit from further testing and improvements [24]. The objectives of this study are to: 1) confirm the internal structure of the instrument used to measure professional equity of physicians; 2) compare the levels of professional equity perceived by physicians paid by FFS, blended methods, and APP; 3) identify differences in the levels of fulfilment, income and recognition dimensions of equity among physicians paid by FFS, APP and blended schemes; and 4) test an interaction effect between specialty group and payment method on the levels of professional equity, controlling by number of patients seen per week, age and gender.

2 Methods

A cross-sectional study was conducted in Saskatoon Health Region (SHR) in 2011. SHR is the largest health region in Saskatchewan, actively involved in research and health human resources training [25]. All physicians in the region, except those who were on a leave of absence or those in a residency program, were invited to participate.

Applying the Dillman method [26], physicians were sent a survey in the mail, offering an on-line option to participate by e-mail. Three follow-up mails were sent to non-responders after the initial mail-out, with the last mailing including a one page non-response survey with key questions to check for response bias. Participants were asked about their perception of professional equity, among other well-being measures, type of payment plan, and demographic information. Ethics approval from the Behaviour Research Ethics Board, University of Saskatchewan, and operational approval from the SHR were obtained to conduct this study.

2.1 Measures

The instrument used to measure professional equity of physicians consisted of 15-items with three dimensions (five items per dimension), evaluating perceived intangible and tangible rewards for practicing medicine [24]. The intangible rewards were measured by fulfilment and recognition dimensions, and the tangible rewards were measured by the dimension of income. The professional equity measure is capable of assessing the degree of fairness of the exchanges, linking specific demands of medical practice with different types of rewards. All of the items were scored using 6-point scales. The wording of all items was reviewed and two items which had poor loadings in the Canadian sample of physicians [24] were adjusted: "income reflects practice expense" to "how well income reflects years of experience", and "proportion of uninteresting work" to "fulfilment with choices of activities carried out". In addition, two new items were added to the recognition dimension: "dedication leads to career advancement" and "recognition from own family".

Confirmatory factor analysis (CFA) was performed, using the statistical software EQS 6.1, to confirm the internal structure validity of the questionnaire. A χ^2/df ratio between 2 and 3, a Root Mean Square Error of Approximation (RMSEA) < 0.08 and a 95% C.I. with a lower boundary < 0.06, a Comparative Fit Index (CFI) > 0.9, a Normed Fit Index (NFI) > 0.9, a Non-Normed Fit Index (NNFI) > 0.9, and an Incremental Fit Index (IFI) > 0.9 were considered as indicators of an adequate model adjustment [27].

Cronbach's alpha coefficients were computed for the measure as a whole and for each dimension, assessing internal consistency of the instrument. The levels of the overall equity scale were standardized by summing the scale items, then dividing by the number of items, yielding scores from 1.00 to 6.00. Similarly, standardized scores were computed for the dimensions of fulfilment, financial, and recognition equity.

2.2 Analysis

One-way analyses of variance (ANOVA) and Scheffe tests were carried out to account for differences among payment methods (FFS, APP, and blended schemes) on the overall levels of professional equity, and the three dimensions: fulfilment, recognition, and income equity. ANOVAs and *T*-Tests were used to compare professional equity levels among number of patients seen per week (< 40, 40-100, and > 100) and specialty groups (FPs *vs*. clinical/surgical specialists), respectively.

In order to test the interaction effect between specialty group and payment method on professional equity, a linear regression model was used. First, unconditional analyses were carried out between the dependent variable (15-item professional equity scale) and each of the considered independent variables (payment method, specialty group, number of patients seen per week, age group, and gender). Second, the interaction effect between payment method and specialty group was tested in the model, controlling by number of patients seen per week, age group, and gender. Finally, possible interactions between payment method and other predictors were also tested. These analyses were completed using the statistical software SPSS® 20.

3 Results

The response rate was 48.1%; with 382 practitioners of the 794 eligible physicians completing the questionnaire. In total, 253 questionnaires were received on paper and 129 were submitted on-line. In the sample group, 136 participants (35.6%) were FPs, 233 (61%) respondents were from medical or surgical specialties, and the remaining 13 (3.4%) were pathologists. The mean age of the sample was 49.04 years (*SD* = 11.4), and 18.45 (*SD* = 12.3) was the mean years of experience. Furthermore, according to payment method for practicing medicine 45.3% (n = 173) of physicians were paid by FFS, 24.6% (n = 94) were remunerated by APPs, and 30.1% (n = 115) were paid by blended schemes of APP and FFS. Since there were only 13 pathologists and all were paid by APPs, this group was excluded from the analyses for an adjusted study population of 369 physicians for this report. Table 1 presents characteristics of participants by specialty groups.

Table 1. Demographics by specialty groups (n = 382)

	All physicians	Family/general practitioners n (%)	Medical-surgical specialists n (%)	Pathologists† n (%)
Age group (years-old)				
Less than 40	108	38 (35.2)	66 (61.1)	4 (3.7)
Between 41 and 49	84	23 (27.4)	57 (67.9)	4 (3.7)
Between 50 and 59	117	41 (35)	72 (61.5)	4 (3.7)
More than 60	71	33 (46.5)	37 (52.1)	1 (1.4)
Gender				
Female	142	57(40.1)*	77(54.2)*	8(5.6)*
Male	240	79(32.9)*	156(65)*	5(2.1)*
Payment method				
Pure FFS	173	101(54.4)#	72(41.6)#	-
Blended schemes	115	15(13)#	100(87)#	-
Pure APPs	94	20(21.3)#	61(64.9)#	13(3.4)†
Number of patients per week				
Less than 40	112	21 (18.9)#	90 (81.1)#	-
Between 40 and 100	137	36 (27.3)#	96 (72.7)#	-
More than 100	133	79 (62.7)#	47 (37.3)#	-

† Group omitted from further analyses due to lack of payment comparison category; # χ^2 with $p < .001$; * χ^2 with $p < .05$

3.1 Confirmatory factor analysis of the professional equity measure

Before performing the CFA, the minimum standards for factor analysis were verified: Bartlett's Sphericity = 3,682.74, $p < .001$, and the Kaiser-Meyer-Olkin Measure of sampling was 0.88. Descriptive statistics for items and corrected item-total correlations are presented in Table 2. Almost all corrected item-total correlations ranged from 0.37 to 0.67; only two items had correlations below 0.3 (EQREC01 .27 and EQREC07 .25).

Table 2. Professional equity questionnaire for physicians

	Item	Mean	*S.D*	Corrected Item-Total Correlation	α dimension
Regarding fulfilment, consider the following aspects of your medical practice. (from 1 "Very Low" to 6 "Very High")					0.87
EQFUL01	Your sense of gratification derived from providing care to patients is:	4.81	0.91	0.44	
EQFUL02	Your sense of contributing to society in your various roles as a physician is:	4.63	0.94	0.44	
EQFUL03	The opportunities to use your most advanced clinical skills are:	4.37	0.96	0.49	
EQFUL04	The choices you have over the activities you carry out or participate in are:	4.20	1.03	0.60	
EQFUL05	Your sense of accomplishment from your work as a physician is:	4.71	0.92	0.58	
How well does your income reflect: (from 1 "Not at all" to 6 "Perfectly")					0.94
EQINC01	The time you spend on your duties?	3.85	1.36	0.60	
EQINC02	Your qualifications and training?	3.90	1.37	0.63	
EQINC03	Your responsibilities?	3.79	1.35	0.66	
EQINC04	The stresses of making risky decisions?	3.49	1.47	0.67	
EQINC05	Your years of experience?	3.44	1.59	0.60	
Regarding recognition, please consider the following aspects of your practice. (from 1 "Strongly disagree" to 6 "Strongly Agree")					0.79
EQREC01	Patients often express their appreciation for the clinical care that you provide to them.	4.64	1.09	0.27	
EQREC02	Your contributions to the general well-being of your region are appreciated.	3.81	1.30	0.59	
EQREC03	Your colleagues acknowledge extra efforts you make in carrying out your responsibilities.	4.01	1.19	0.58	
EQREC04	Nurses you work with show respect for you as a physician.	4.72	1.05	0.37	
EQREC05	Administrators understand the stresses you experience as a physician.	2.98	1.33	0.48	
EQREC06	Your dedication as a physician has led to advances in your medical career.	4.21	1.17	0.55	
EQREC07	Your family understands the stresses you face as a physician.	4.54	1.18	0.25	

Note. n = 369 (134 females and 235 males); Cronbach's Alpha for 17-item Scale ($\alpha = 0.88$)

Then, using the tri-dimensional structure proposed a priori for the professional equity measure for physicians [24], a CFA was performed including all 17 items. According to the robust maximum likelihood results, the initial model presented an adequate fit: $\chi^2 = 307.63$, df = 113, $p < .001$; $\chi^2/df = 2.72$; RMSEA = 0.07, 95% C.I. = 0.06-0.08, CFI = 0.93, NFI = 0.9, NNFI = 0.92, IFI = 0.93. However, a model adjustment was required since two items presented low eigen values

(EQREC01 = 0.44 and EQREC07 = 0.35). The item with the lowest eigen value (EQREC07 "recognition obtained from own family") was eliminated. The CFA with 16-items was run yielding similar results. Thus, EQREC01 item "recognition obtained from patients" was also eliminated. The final 15-item measure was tested and model fit indicators presented an improvement: $\chi^2 = 233.46$, df = 84, $p < .001$; $\chi^2/df = 2.78$; RMSEA = 0.07, 95% C.I. = 0.06-0.08, CFI = 0.94, NFI = 0.92, NNFI = 0.93, IFI = 0.95; Figure 1 presents the final model with standardized estimates. This model yielded very good internal consistency reliability ($\alpha = 0.89$). The Cronbach's alpha for each of the 5-item dimensions was: fulfilment, α = 0.87; income, $\alpha = 0.94$; and recognition, $\alpha = 0.79$. This 15-item tri-dimensional questionnaire was considered for further analyses.

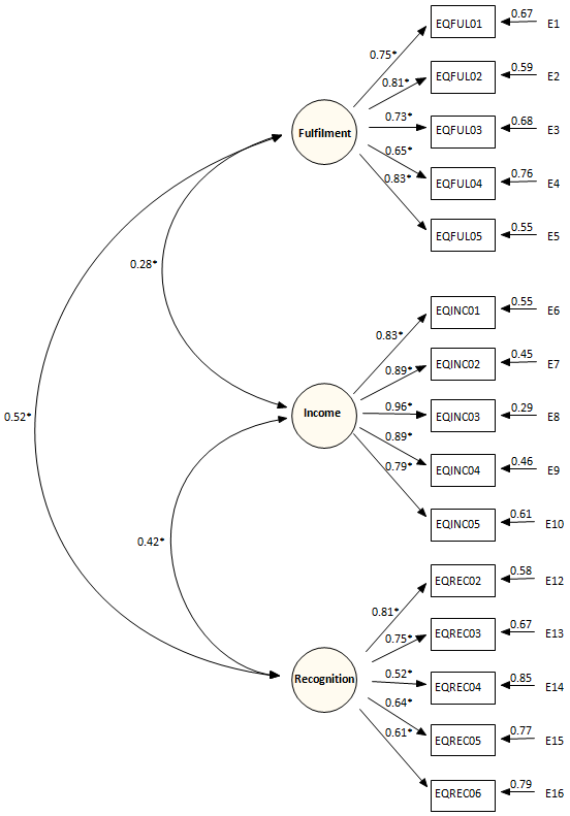

Figure 1. CFA of the professional equity questionnaire for physicians: The tri-dimensional structure of the 15-item questionnaire–fulfilment, income and recognition equity–is illustrated with standardized estimates.

3.2 Professional equity by payment methods

In the sample group, the mean level of professional equity was 4.06 (*SD* = 0.76), ranging from 1.53 to 5.67, and the median was 4.13. The means for the dimensions were: fulfilment, 4.55 (*SD* = 0.77); income, 3.70 (*SD* = 1.28); and recognition, 3.94 (*SD* = 0.90).

One-way ANOVA showed significant differences in the levels of professional equity by payment method, $p = .004$. Physicians paid by FFS perceived lower professional equity than those paid by APPs ($p = .005$). By dimensions, differences in income equity levels were found, $p = .03$, as well as in the recognition dimension, $p = .001$. Physicians paid by APPs reported higher levels of income ($p = .03$) and recognition equity ($p = .001$) than those paid by FFS. There were no significant differences in the levels of fulfilment equity by payment method. Furthermore, a higher level of fulfilment equity was identified between physicians who see less than 40 patients per week and those who see over 100 ($p = .02$). According to number of patients, there were no significant differences on the overall professional equity, either on the income and recognition dimensions. Finally, FPs perceived lower levels of professional equity than clinical-surgical specialists ($p = .003$), as well as poorer levels of fulfilment ($p = .003$) and income equity ($p = .008$). Table 3 presents the mean levels of professional equity, overall and by each dimension, according to payment method, specialty group, and number of patients seen per week.

Table 3. Mean (*SD*) levels of professional equity perceived by physicians according to payment method, specialty group, and number of patients seen per week

n = 369	Professional equity levels	Professional equity levels by dimension		
		Fulfilment	Income	Recognition
All participants	4.06 (0.76)	4.55 (0.77)	3.70 (1.28)	3.94 (0.90)
Payment method				
Fee-for-service (FFS)	3.94 (0.76)†	4.48 (0.82)	3.54 (0.10)*	3.80 (0.92)**
Blended FFS-APP schemes	4.10 (0.76)	4.62 (0.74)	3.72 (0.12)	3.97 (0.88)
Alternative payment plans (APP)	4.27 (0.70)†	4.57 (0.69)	4.00 (0.15)*	4.23 (0.82)**
Specialty group				
Family/general practitioners	3.91 (0.79)†	4.39 (0.83)	3.47 (1.26)	3.88 (0.81)
Medical-surgical specialists	4.15 (0.73)†	4.64 (0.71)†	3.83 (1.28)†	3.99 (0.87)
Number of patients per week				
Less than 40	4.21 (0.79)	4.72 (0.79)*	3.90 (1.28)	4.01 (0.92)
Between 40 and 100	4.02 (0.70)	4.50 (0.67)	3.56 (1.30)	4.00 (0.82)
More than 100	3.98 (0.77)	4.44 (0.81)*	3.66 (1.25)	3.83 (0.95)

* $p < .05$; † $p < .01$; ** $p \leq .001$

3.3 Interaction effect between payment method and specialty group

First, unconditional analyses identified that payment method ($p = .002$), specialty group ($p = .001$), and number of patients seen per week ($p = .03$) were predictors of professional equity. Gender was kept in the model since it confounded coefficients of specialty group and number of patients per week; similarly, age group confounded the coefficients of payment method, number of patients, and specialty group. In the model with five predictors (see Table 4), a significant interaction effect between specialty group and payment method was identified ($p = .01$). No significant interactions between payment methods and the other variables in the model were found.

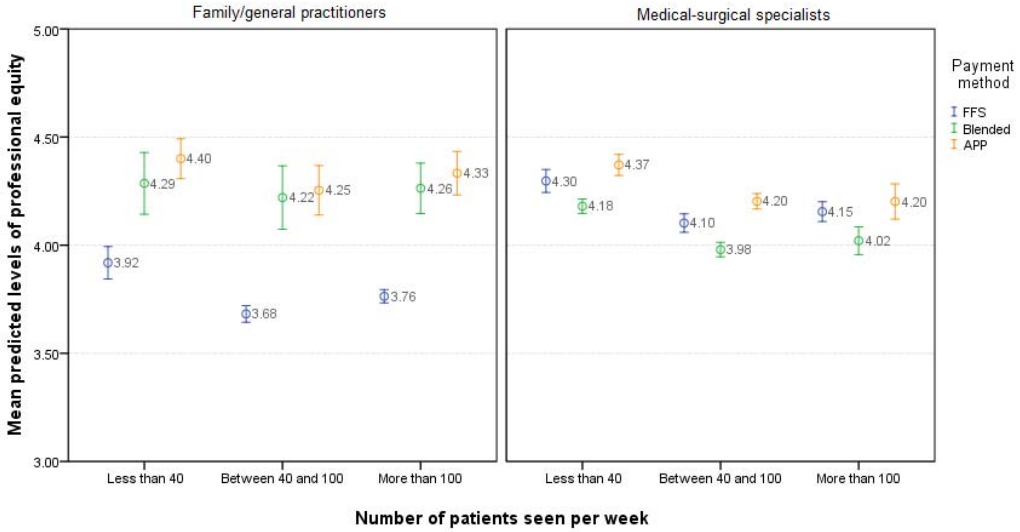

Figure 2. Mean predicted levels and 95% C.I. of professional equity by payment method, specialty group, and number of patients seen per week.

As depicted in Figure 2, a similar pattern across different ranges of patients seen per week were observed among FPs; higher levels of professional equity can be predicted among FPs with alternative payment plans (APPs) and blended schemes in comparison to those paid with FFS, despite the number of patients seen per week. In contrast, small differences

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were observed among clinical/surgical specialists; slightly higher predicted levels of professional equity were found among physicians with APPs and who see less than 40 patients per week.

Table 4. Estimates and 95% CI of predictors in the linear regression model of professional equity levels of physicians

	Beta	95% CI	*p*-value
Number of patients per week			
Less than 40	*Ref.*		
Between 40 and 100	-0.18	(-0.37, 0.00)	.05
More than 100	-0.16	(-0.37, 0.04)	.11
Specialty group			
Family/general practitioners	*Ref.*		
Medical-surgical specialists	0.41	(0.19, 0.64)	< .001
Payment method			
Pure FFS	*Ref.*		
Blended	0.49	(0.10, 0.88)	.01
Pure APPs	0.57	(0.22, 0.91)	< .001
Gender			
Female	*Ref.*		
Male	0.08	(-0.08, 0.24)	.33
Age group			
less than 40 year-old	*Ref.*		
Between 41 and 49 year-old	-0.11	(-0.32, 0.10)	.29
Between 50 and 59 year-old	-0.05	(-0.24, 0.14)	.60
more than 60 year-old	0.18	(-0.04, 0.40)	.12
Interaction payment and specialty group			
Blended*medical-surgical specialists	-0.50	(-0.92, -0.07)	.02
APPs*medical-surgical specialists	-0.61	(-1.06, -0.17)	.01
Intercept	3.85	(3.60, 4.10)	< .001

4 Discussion

The structure of the instrument to assess professional equity of physicians has been confirmed. The instrument has three dimensions evaluating intangible and tangible rewards for physicians practicing medicine [24]. Adjustments have been done to items in the recognition dimension. Acknowledgments from colleagues, nurses, administrators, health region are relevant sources of recognition for physicians, as well as dedication leading to career advancement (the new item added to this dimension). Also, the physicians in our sample did not consider recognition from their family and patients to be essential. This may mean that physicians do not expect credit or appreciation from patients for their professional efforts. Medical practitioners are more likely to expect trust from patients, perceived by provision of adequate information, compliance to recommended treatments, and engagement to self-care [28].

The ANOVA demonstrated that the perception of professional equity of physicians is affected by their payment method. This phenomena might be present because a specific contract could directly provide a balance between contributions and rewards [29] and, also because payment methods for physicians have an incentive effect on their behavior [30, 31]. Quantities of care delivered [15, 31] and the way that health services are provided [16, 31] are affected by payment method. As our study identified, APPs could endorse a balance in the evaluation of contributions and rewards for practicing medicine. This impact was specifically observed in the income and recognition dimensions where practitioners under APPs reported better levels of equity than those paid by FFS. Physicians paid by APPs considered that they are receiving fair economic

rewards according to their qualifications, training, experience, responsibilities, risks, and time devoted to medical practice. Physicians paid by APPs perceived appropriate recognition from administrators and the health region for their contributions, as well as career advancements. In contrast, fulfilment equity could not be affected by payment method; this dimension is more an assessment of the intangible rewards for practicing medicine [24], being closely related to specialty and medical practice characteristics.

Critical findings that require special attention are that FPs perceived poor fulfilment and income equity. Previous studies have described that FPs experience poor career satisfaction [17, 18]. These results depict a lack of motivation among FPs who are fundamental in the provision of primary care. Indeed, strengthening primary care has been recommended as a strategy to improve health of populations [32]. In Canada, several provinces are engaged to change primary health care, promoting inter-professional work, team-based care, and alternative payment arrangements [33]. Since income disparities are present among medical specialties [19], APPs could be more supportive of primary care reforms by the enhancement of professional equity–adjusting tangible and intangible rewards–of FPs. APPs could help to explore more challenging and interesting medical practices.

Ten years ago, the Canadian Standing Senate Committee on Social Affairs, Science and Technology called for changes in the way that physicians are paid at the primary health care level, recommending APPs [34]. During the last decade, there have been considerable efforts to explore alternative payment options to attract and retain FPs [30]; however, FFS is still the dominant method of payment across all Canadian provinces [13, 14]. Indeed, a single payment method cannot be recommended for all physicians because each scheme fits different scenarios. FFS is recommended as an incentive to increase quantity of care delivered and acceptance of new patients; capitation encourages preventive care and increases collaboration among providers; and, salaries along with blended schemes may be suitable for sparsely populated areas [31].

Non-FFS payment alternatives should support the development of innovative models based on inter-professional, coordinated, and ongoing care to promote a strong primary health system. Given that physicians self-select their payment method and the time dedicated to direct and indirect patient care varies [15, 16], FPs with a considerable number of elderly patients or cases with chronic conditions could be attracted by group practice. Other FPs might be interested in dedicating their full time practice to be hospitalists, leading a patient-centered model of care for the articulation of hospital and primary health services. Within these scenarios, APPs could provide professional equity to motivate innovations in health care delivery. As identified in our linear regression model, despite different volumes of patients, enhanced levels of professional equity among FPs with blended or alternative payment schemes could be predicted, a motivating factor which could support innovative primary care models.

Despite the importance of remuneration highlighted in the present study, it is relevant to consider that payment is not the most important motivator among medical doctors. Key sources of motivation for physicians are professional autonomy [5, 35], achievement [6], relationships with patients [4], and interaction with colleagues [6, 36]. Motivation of physicians is affected by both financial and non-financial incentives which should be considered together for long term results [36, 37]. Policy makers need to recognize that motivation among physicians is complex and requires comprehensive approaches [3]. Therefore, there are personal and environmental factors that should be carefully studied in the evaluation of physicians' well-being.

Regarding limitations of this study, it needs to be acknowledged that this research was conducted on a sample of physicians practicing in one region among many in Canada. Results can be extrapolated to physicians practicing in the SHR and also to those practicing in similar health regions. Since this study was cross-sectional, relationships between variables are associations. We recommend further longitudinal research to evaluate the effect of APPs. Covariates and potential confounders should be considered to study the impact of payment methods on physicians' well-being indicators, considering both personal and environmental factors.

5 Conclusions

An instrument specifically designed for physicians to measure professional equity has been tested. This measure allows the overall evaluation of professional equity considering both intangible and tangible rewards for practicing medicine. The tri-dimensional structure of professional equity has been confirmed and showed good internal consistency.

Higher levels of professional equity were identified among physicians paid by APPs in comparison to those paid by FFS. Furthermore, physicians paid by APPs considered that they are receiving fair economic rewards and appropriate recognition. FPs perceived lower fulfilment and income equity in comparison to medical-surgical specialists. Moreover, enhanced levels of professional equity could be predicted among FPs with APPs and blended schemes, controlling by the number of patients, age and gender. Thus, APPs (salary, sessional, capitation, *etc*.) could be further explored to improve professional equity of FPs, promoting fairness and well-being among medical practitioners, and indirectly impact primary health care outcomes. APPs bring a policy alternative to support the development of innovative primary care models.

Competing interests

The authors declare that they have no competing interests.

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