Is organizational justice associated with clinical performance in the care for patients with diabetes in primary care? Evidence from the improving Quality of care in Diabetes study

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Background. Type 2 diabetes is an increasingly prevalent illness, and there is considerable variation in the quality of care provided to patients with diabetes in primary care.

Objectives. The aim of this study was to explore whether organizational justice and organizational citizenship behaviour are associated with the behaviours of clinical staff when providing care for patients with diabetes.

Methods. The data were from an ongoing prospective multicenter study, the ‘improving Quality of care in Diabetes’ (iQuaD) study. Participants (N = 467) were clinical staff in 99 primary care practices in the UK. The outcome measures were six self-reported clinical behaviours: prescribing for glycaemic control, prescribing for blood pressure control, foot examination, giving advice about weight management, providing general education about diabetes and giving advice about self-management. Organizational justice perceptions were collected using a self-administered questionnaire. The associations between organizational justice and behavioural outcomes were tested using linear multilevel regression modelling.

Results. Higher scores on the procedural component of organizational justice were associated with more frequent weight management advice, self-management advice and provision of general education for patients with diabetes. The associations between justice and clinical behaviours were not explained by individual or practice characteristics, but evidence was found for the partial mediating role of organizational citizenship behaviour.

Conclusions. Quality improvement efforts aimed at increasing advice and education provision in diabetes management in primary care could target also perceptions of procedural justice.

Keywords. Clinical behaviour, diabetes, health professional, organizational justice, United Kingdom.

Introduction

Due to the large number of patients and associated comorbid conditions, diabetes is one of the most common conditions treated in primary care in the UK and in many other European countries. Clinical practice guidelines (The National Institute for Health and Clinical Excellence) define standards of care, but previous studies suggest that there is a large variation in the quality of care provided to the patients with diabetes.

Some of this variability will be due to patient factors (e.g. physiology and adherence to treatment), but it is reasonable to assume that it also reflects differences in clinical management behaviours. It has repeatedly been shown in other fields that work-related psychosocial factors such as time pressure, job control and
organizational justice explain variability in work-related behaviour. The only study conducted in the UK suggested that structural (booking interval and practice size) and psychosocial factors (team climate) of the practices may be associated with diabetes management. The present study aimed to investigate whether variability in the provision of guidelines-recommended health professional behaviours is accounted for by the degree of perceived organizational justice within primary care practices.

The term ‘organizational justice’ refers to the extent to which people believe that their viewpoint is considered and information is shared concerning decision-making and whether their supervisor treats individuals fairly and in a truthful manner. According to D.T. Miller, injustice is experienced when people perceive that they are treated in a way that they do not deserve to be treated or that they are not treated in the way they deserve. More specifically, organizational justice is a combination of resource distribution, decision-making principles (procedural justice) and treatment practices (interactional justice) that people in general may experience as being fair or unfair. Procedural justice refers to clear, transparent, informative, respectful and participatory decision-making rules and processes within organizations, or in fact, within any kind of groups. Following the principles defined by Leventhal, procedural justice defines the extent to which decision-making procedures are accurate, correctable, ethical, free of bias, applied consistently and representative of all concerns. Interpersonal justice refers to treating others with dignity and respect and the quality of treatments employees experience in their interpersonal interactions during the completion of organizational processes; specifically, it is employees receiving polite and considerate treatment from their supervisors.

One previous study conducted in elderly care showed that nursing staff perceived procedural justice to be higher in high productivity units than those in low productivity units. Similarly, low organizational justice has been found to be associated with clinical quality outcomes, such as unnecessary drug use and pressure ulcers in elderly care.

Organizational citizenship behaviour (OCB) has been studied as a consequence of employee attitudes and as an antecedent of positive organizational outcomes. OCB refers to extra-role behaviour and was originally defined as ‘individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization’. In this study from the iQuaD study, we examined the relationship between perceived organizational justice and scores of self-reports of six clinical behaviours relevant to diabetes care: providing advice about weight management, prescribing to lower blood pressure, foot inspection, providing advice about self-management, prescribing for glycaemic control (HbA1c) and providing general education about diabetes. We also tested whether OCB (defined as extra-role behaviour) mediated the associations between perceived justice and clinical behaviour. Fair management may increase extra-role behaviour of the staff, which in turn may affect the possibilities of providing high-quality care to patients with diabetes.

Methods

Study population and design

A detailed description of the iQuaD study methods and baseline results are described in Eccles et al. The iQuaD study sample was based in 100 general practices identified within the UK’s Medical Research Council General Practice Research, a representative sample of practices from across England, Scotland, Wales and Northern Ireland. We were able to collect data from 99 practices. Participants in this study were all the clinical members of the primary care team who were involved in the routine delivery of care to patients with type 2 diabetes within the practice. The final sample (N = 467) consisted of 414 GPs and 53 nurses.

Organizational justice

Organizational justice perceptions were assessed by items derived from Moorman’s study and consisted of two factors: procedural justice (7 items, Cronbach’s alpha for this sample α = 0.91) and interactional justice (6 items, α = 0.90). The first scale measures the extent to which people perceive that decision-making procedures promote consistency, and suppress bias, correctness, representativeness, and equality (‘Procedures are designed to collect accurate information necessary for making decisions,’ ‘Procedures are designed to provide opportunities to appeal or challenge the decision,’ ‘Procedures are designed to generate standards so that decisions can be made with consistency,’ and ‘Procedures are designed to hear the concerns of all those affected by the decision’). The latter indicates the perceived quality of the supervisor’s interpersonal behaviour (‘Your supervisor considers your viewpoint,’ ‘Your supervisor is able to suppress personal biases,’ ‘Your supervisor treats you with kindness and consideration,’ and ‘Your supervisor takes steps to deal with you in a truthful manner’). The items were rated on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The intrarater agreement was 0.93 (95% CI 0.92–0.94) in both scales. Intrarater agreement is a homogeneity measure that expresses how similarly participants within each practice perceive the fairness of organizational procedures (procedural justice scores of self-reports of six clinical behaviours the relationship between perceived organizational justice and the quality of treatments employees experience in their interpersonal interactions during the completion of organizational processes; specifically, it is employees receiving polite and considerate treatment from their supervisors.

In this study from the iQuaD study, we examined the relationship between perceived organizational justice and scores of self-reports of six clinical behaviours relevant to diabetes care: providing advice about weight
Organizational justice and clinical behaviour

Organizational citizenship behaviour
OCB was assessed using the 12-item scale developed by Moorman\(^{11}\) (Cronbach’s alpha for this sample \(\alpha = 0.88\)) (‘Your team members help each other out if someone falls behind in his/her work.’ ‘Your team members take steps to try prevent problems with other team members.’ ‘Your team members encourage each other when someone is down.’). The items were rated on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). A composite score was formed by averaging scores across items.

Individual and practice characteristics
Practice demographics included number of total clinical staff, ratio of clinical to administrative staff and ratio of GPs to nurses. Individual characteristics were sex, occupation (GP versus nurse), experience (how many years from qualification) and number of weekly sessions worked. Organizational characteristics included practice size, staff–patient ratio, qualification, occupational position, experience and qualification, which have all been associated with organizational justice perceptions or clinical outcomes in previous studies\(^{18,20}\).

Clinical behaviours
The six clinical behaviours (Table 1) were chosen to cover a range of clinical activities (prescribing, non-prescribing), reflect decisions that were not necessarily straightforward (controlling blood pressure that was above target despite other drug treatment) and reflect recommended best practice as described by national guidelines [http://guidance.nice.org.uk/CG/Published].

Each behaviour was defined in explicit detail in terms of target of the behaviour (e.g. the patient), the action involved (e.g. prescribing to reduce blood pressure), the context (e.g. within a clinical consultation) and the time (e.g. over the past 12 months).

Clinical behaviour was measured as responses to retrospective self-report questions administered after completing the organizational justice measure. In the self-report measure the participants responded on 10-point scale to the questions in Table 1.

Statistical analysis
As in many previous\(^{21-24}\) studies, the associations between organizational justice and outcomes (this time behavioural outcomes) were tested using linear multilevel regression modelling with GLIMMIX procedure to account for clustering—i.e. the possible correlation of measures from individuals working within the same practice. Multilevel analysis deals with objects that are hierarchically structured. In the simplest case of a two-level structure, individual employees (Level 1) are nested within organizational units (Level 2). Although we were interested in modelling individual justice perceptions and clinical behaviour, we considered variables at both the individual level and the practice level. Previously used strategies for accounting for the multilevel nature of data, such as using aggregate analysis or inclusion of dummy variables, at Level 2 are not satisfactory. When there are natural clusters in the data, standard errors are underestimated, creating a risk for errors in hypothesis testing. The simplest two-level model can be specified as two interrelated equations and tested at two stages: first, a null model test specifying the intra-class correlation (ICC) and second, the actual test with independent variables. The null model contains no independent variables, and the justice perception or clinical behaviour of an individual depends only on the mean level of individuals in all practices and a differential for each practice and for each person. These two differentials are treated as random variables, and their variability is summarized in two variances. Consequently, individual clinical behaviours are summarized in three parameters: the overall mean, the between-practice variance, and the with-within-practice, between-practice variance. If practices are not implicated in behaviours, the ratio of the between-practice variance to the total variance will be close to zero. The null model simply allows the variance to be decomposed into each level, but the model can be extended to include independent variables for both individuals and practices. If these variables are important determinants of clinical behaviour, their inclusion in the model will lead to a reduction in residual variance between individuals and/or between practices. If this is the case, then any apparent differences between practices revealed by the null model are really artifacts of differential composition. In the model, however, which fails to adequately specify individual characteristics, the context (the difference that a practice makes) is confounded with the composition (what is in a practice). Multilevel models can be estimated by iterative generalized least squares, which are implemented in the Glimmix procedure of the SAS 9.2 software. In the present study, model testing proceeded in four consecutive steps: first, a null model was tested without the inclusion of any independent variables. Second, organizational justice variables were added as independent variables predicting clinical behaviour. Third, potential individual confounding variables were added and finally practice-level variables were included. In addition to the regression estimates, the changes in the individual- and practice-level variance were examined. We repeated these steps for each of the six clinical behaviours. There
were no clear differences in our results between men and women, so the data were pooled and adjusted for sex. The second level variance was estimated using ICC expressing shared variance among staff in each practice. The associations are expressed as unstandardized regression coefficients (i.e. change in outcome on 10-point behaviour scale for 1-point change in the justice measure). The associations were tested first in all participants that expressed that they provide care to patients with type 2 diabetes. As a sensitivity analysis we reran the analyses with only GPs included. The mediating effect of OCB in the potential associations between organizational justice components and clinical behaviour was tested using hierarchical linear regression analyses and the Sobel test.

Results

The characteristics of the study participants (clinical staff in the 99 practices) are shown in Table 2. Thirty-seven per cent were men and most were primary care physicians. On average, the clinicians worked 7 sessions (3.5 days) per week. The mean number of clinical staff per practice was 9.7 (SD 4.5). On average, participants perceived their organizations to be high in procedural and interactional justice (means 5.3 and 5.8 on the 7-point scale). The ICC of procedural justice was 0.09 and for interactional justice 0.12. On average, participants reported performing the behaviours consistent with clinical guidelines for about 7 out of 10 patients with respect to the clinical behaviours investigated.

The results of the multilevel analyses are presented in Table 3 for perceived procedural justice and in Table 4 for perceived interactional justice. The null models indicate that the clinical behaviours varied very little between practices, with the Level 2 intercept variance ranging from 0.58 to 0. The highest and only statistically significant ICC was in providing weight management advice, suggesting that 12% of the variance in this behaviour was attributed to practice-level variance. Higher perceived procedural justice was associated with reports of providing weight management advice to more patients, more frequently giving advice about self-management and providing general education to patients with diabetes (Table 3). Similar results were obtained using individual-level analyses (Pearson correlation range 0.13–0.18, all P-values <0.01). All these associations were also robust to adjustments for individual- and practice-level variables, including sex, qualification (GP versus nurse), experience and number of weekly sessions worked, practice list size, number of total clinical staff, ratio of clinical to administrative staff and ratio of GPs to nurses (Table 3). The only significant association between the interactional justice component and the clinical behaviours was between lower interactional justice and more frequent foot examination, but this was not robust to adjustment for individual- and practice-level variables (Table 4).

In the sensitivity analysis (in GPs only), procedural justice was associated with more frequent provision of weight management advice ($B = 0.29, F = 5.88, P = 0.013$) and more frequent provision of self-management advice to patients with diabetes ($B = 0.42, F = 5.55, P = 0.019$).
The association between procedural justice and providing general education was no longer significant when tested with GPs only ($B = 0.28, F = 2.42, P = 0.12$). While there was an association between interactional justice and more frequent provision of weight management advice ($B = 0.35, F = 4.99, P = 0.038$) in GPs but not with any other clinical behaviour.

We additionally tested whether perceived OCB mediated the associations between the procedural component of organizational justice and each clinical behaviour. OCB was associated with procedural justice ($r = 0.59, P < 0.001$), but it acted as a statistically significant mediator only in the association between procedural justice and more frequent provision of self-management advice to patients with diabetes (Sobel test $t = -2.57, P < 0.01$, explained 55% of the original association). OCB was, however, not associated with any of the clinical behaviours (range from $r = 0.10, P = 0.08$ to $r = -0.01, P = 0.84$).

**Discussion**

The results from the linear multilevel regression analyses showed that higher procedural justice perception was associated with more frequent performance of three advice-related behaviours: giving advice about weight management, giving self-management advice and giving general education. This association was not accounted for by individual-level or practice-level variables such as sex, being a GP or nurse, experience, practice size and skill mix. We did not find robust evidence to suggest that the interactional component of the organizational justice perception is associated with diabetes-relevant clinical behaviour.

The six behaviours selected for this study represent behaviours that are both technical actions such as prescribing drugs and more interactional such as providing advice. It is of note that the associations were found for interactional behaviours that take time and that some physicians may not see as core to their role, but to the role of nurses. However, sensitivity analyses largely demonstrated that the same associations were shown in the GP subsample with small changes in $P$-values due to smaller number of participants. Thus, procedural justice perceptions may be more relevant for advice- and education-provision behaviour than for prescribing and observational behaviours.

Some of the variance in procedural justice was attributable to practice-level differences, suggesting that practices as a whole differed in the extent to which their clinical members perceive the organization to be just. The interrater agreement was relatively high in both justice dimensions. However, the relative lack of practice-level variability in clinical behaviours precluded any substantive test of whether shared perceptions about procedural justice at a practice level explain variability in behaviour between practices.

Practice-level variance of organizational justice perceptions and especially clinical behavior were small compared with the total variation in those variables between individual participants. This was more or less...
expected with variables measured at the individual level. More practice-level clustering was expected in justice variables, because potential shared perception of organizational context. Clinicians working in the same practice should perceive their psychosocial environment more similarly than a random sample of clinicians. Clinical behaviour is, by definition a typical behaviour of an individual clinician and thus less practice-level variability was expected. In our study, the association between clinical behaviour and organizational justice perception was attributable to shared individual-level variability.

Our results suggesting that interactional justice perceptions are not associated with clinical behaviour of the clinical staff is in line with previous findings that work performance tends to be associated specifically with procedural justice.5,6 These results also have strong face validity for the primary care context, where interactional justice may not apply as much as it would in larger, more traditionally hierarchically structured organizations. Indeed, similar results were found in long-term elderly care suggesting that procedural but not interactional justice is associated with the quality of care.18

Procedural and relational justices reflect basic justice principles in slightly different ways. Some procedures are to be applied to all (everybody should be heard in important issues concerning themselves) and some according to their input (anyone who exceeds the standard may have a bonus). Procedural justice incorporates these principles and rules to execute the decision. Relational justice is more fundamentally about universalism: all employees are entitled to be treated with respect and dignity. Thus, it may be that it is the particularly high procedural justice that enhance and motivate high-quality performance.
Association between interactional justice and clinical behaviours of 467 clinical staff members working in 99 primary health care practices (linear multilevel regression modelling)

<table>
<thead>
<tr>
<th>Fixed effects of interactional justice</th>
<th>Interception variance at Level 2 and 1 (standard error)</th>
<th>Fixed effects model estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure management behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Null model</td>
<td>0.22 (0.19)/4.23 (0.35)</td>
<td></td>
</tr>
<tr>
<td>Adjusted for none(^a)</td>
<td>0.22 (0.19)/4.23 (0.35)</td>
<td>0.20 (0.15) ns</td>
</tr>
<tr>
<td>Adjusted for individual-level variables(^b)</td>
<td>0.17 (0.18)/4.19 (0.34)</td>
<td>0.14 (0.16) ns</td>
</tr>
<tr>
<td>Adjusted for practice-level variables(^c)</td>
<td>0.19 (0.19)/4.21 (0.35)</td>
<td>0.11 (0.16) ns</td>
</tr>
<tr>
<td>Weight management behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Null model</td>
<td>0.55 (0.22)/3.99 (0.22)</td>
<td></td>
</tr>
<tr>
<td>Adjusted for none(^a)</td>
<td>0.54 (0.22)/4.02 (0.29)</td>
<td>0.07 (0.12) ns</td>
</tr>
<tr>
<td>Adjusted for individual-level variables(^b)</td>
<td>0.60 (0.21)/3.50 (0.26)</td>
<td>0.20 (0.12) ns</td>
</tr>
<tr>
<td>Adjusted for practice-level variables(^c)</td>
<td>0.61 (0.21)/3.50 (0.26)</td>
<td>0.20 (0.12) ns</td>
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<tr>
<td>Feet examination of patients with diabetes</td>
<td></td>
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<tr>
<td>Null model</td>
<td>0.60 (0.54)/10.65 (0.97)</td>
<td></td>
</tr>
<tr>
<td>Adjusted for none(^a)</td>
<td>0.66 (0.58)/10.47 (0.99)</td>
<td>−0.52 (0.22) *</td>
</tr>
<tr>
<td>Adjusted for individual-level variables(^b)</td>
<td>1.43 (0.55)/6.11 (0.60)</td>
<td>−0.14 (0.19) ns</td>
</tr>
<tr>
<td>Adjusted for practice-level variables(^c)</td>
<td>1.57 (0.58)/6.12 (0.61)</td>
<td>−0.15 (0.20) ns</td>
</tr>
<tr>
<td>Self-management advices for patients with diabetes</td>
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<tr>
<td>Null model</td>
<td>0.19 (0.21)/5.67 (0.44)</td>
<td></td>
</tr>
<tr>
<td>Adjusted for none(^a)</td>
<td>0.19 (0.21)/5.67 (0.44)</td>
<td>−0.02 (0.16) ns</td>
</tr>
<tr>
<td>Adjusted for individual-level variables(^b)</td>
<td>0.38 (0.22)/4.49 (0.36)</td>
<td>0.19 (0.15) ns</td>
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<tr>
<td>Adjusted for practice-level variables(^c)</td>
<td>0.35 (0.21)/4.48 (0.37)</td>
<td>0.15 (0.15) ns</td>
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<tr>
<td>Glycaemic control management</td>
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<tr>
<td>Null model</td>
<td>0.09 (0.21)/4.95 (0.43)</td>
<td></td>
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<tr>
<td>Adjusted for none(^a)</td>
<td>0.08 (0.22)/4.51 (0.41)</td>
<td>−0.07 (0.18) ns</td>
</tr>
<tr>
<td>Adjusted for individual-level variables(^b)</td>
<td>0.19 (0.21)/4.61 (0.41)</td>
<td>−0.07 (0.18) ns</td>
</tr>
<tr>
<td>Adjusted for practice-level variables(^c)</td>
<td>0.25 (0.23)/4.64 (0.42)</td>
<td>−0.04 (0.18) ns</td>
</tr>
<tr>
<td>Giving general education for the patients with diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Null model</td>
<td>0.00 (----)/5.56 (0.39)</td>
<td></td>
</tr>
<tr>
<td>Adjusted for none(^a)</td>
<td>0.00 (----)/5.59 (0.39)</td>
<td>−0.01 (0.15) ns</td>
</tr>
<tr>
<td>Adjusted for individual-level variables(^b)</td>
<td>0.00 (----)/4.92 (0.36)</td>
<td>0.24 (0.15) ns</td>
</tr>
<tr>
<td>Adjusted for practice-level variables(^c)</td>
<td>0.00 (----)/4.90 (0.36)</td>
<td>0.21 (0.15) ns</td>
</tr>
</tbody>
</table>

\(^a\)Procedural justice the only variable in the model.
\(^b\)Individual level variables were: Sex, qualification, experience, sessions worked.
\(^c\)Practice-level variables were: total number of clinical staff, clinical/administrative staff ratio, GP/nurse ratio.

\(* P < 0.05, ** P < 0.01, *** P < 0.001.

We found only partial support for the mediating role of OCB in the relationship between justice and clinical behaviour. There are, nevertheless, other potential mediators of the relationship between procedural justice perceptions and clinical behaviour. For instance, fair procedures allow increased accountability of the decision-making within the practice, and indicate that individuals are valued at their workplace,\(^25\)\(^-\)\(^27\) that may increase participation in the organizational affairs.\(^28\) Counterproductive behaviours and withdrawal behaviours can be seen as reactions to perceived injustice, when an employee changes his or her input to restore equity.\(^29\)\(^,\)\(^30\) Experienced injustice seems to trigger defensive cognitions, negative emotions and behaviours that may lead to the position where employees do not have incentives to work in favour of the team as a whole.\(^31\)

A parallel body of research using social cognition models to predict clinical behaviour has shown that constructs from such models consistently predict behaviour.\(^32\) While the present study shows that organizational justice (in particular, procedural justice) predicts health professional behaviour, it remains unclear how perceptions about the organization relate to social cognitions about the behaviours. The interface between theories about the organization and theories of behaviour, and their association with behaviour remains an under-researched area. Research carefully theorizing the relationships between these discipline-specific models is needed.\(^2\)

**Limitations**

In interpreting the findings, several limitations should be taken into account. Although the iQuaD study is, as far as we know, the largest study of its kind to measure psychological predictors of health professional behaviour conducted so far in the UK, our sample size and the number of practices were relatively small compared...
with large scale occupational studies or population studies on work-related psychosocial factors. In addition, it would have been preferable to use objective measures of clinical behaviours. Self-reported clinical behaviour may be open to socially patterned reporting bias. It was not feasible to obtain objective measures of behaviour attributable to individual clinicians for the behaviours studied. However, in the field of social cognition models self-report behaviour measures are widely used and well predicted by various theories. In a review of Godin and others (2008), the models explained 44% of the variance in measures such as the one used in this study and 13% of the variance in objectively measured behaviour. A major advantage of the self-report behaviour measure is that it allows much better specification of the behaviour. In UK primary care, for a chronic disease such as diabetes, where care is delivered over time by several members of the primary care team, it is not possible to link objective clinical data (such as prescribing) to a specific individual. Under these circumstances self-report was the only way of getting individual measure of behaviour.

One problem is that our analyses were based on concurrent report of past behaviour. It is possible that poor performance leads to negative feedback by the ‘supervisor’, which then influences perceptions of organizational justice. This kind of reversed causation cannot be ruled out in this kind of observation study, and further studies using longitudinal designs are needed to support our results. Recently, also other measures of organizational justice has been developed including dimensions such as informational justice. In the future it would be useful to also analyse such dimensions as predictors of clinical behaviour. For example, timely provision of clinical information about patients’ medical needs would be important in this context.

To conclude, our approach of incorporating the psychosocial work environment (i.e. organizational justice perceptions in the measurement of primary care clinical behaviour) provided valuable information on how the quality of clinical behaviour is associated with clinical staffs’ perceptions of their management and decision-making. Thus, although the association between justice evaluations and behaviours were relatively weak, it may be worthwhile to develop managerial and decision-making procedures, feedback systems and meeting procedures, which promote higher perceptions of justice also in primary care organizations.

Contributors: All authors jointly designed the hypotheses, analysed and interpreted the data and wrote the paper. ME is guarantor.

Declaration

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Conflict of interests: None declared.

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