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# Does accreditation affect the job satisfaction of general practitioners? A combined panel data survey and cluster randomised field experiment



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## ABSTRACT

A critical question for policy makers in health care is whether external interventions have unintended consequences such as lowering professionals' job satisfaction. We investigate whether a non-monetary incentive, in the form of mandatory accreditation, affects the job satisfaction of Danish GPs. Accreditation of general practice in Denmark was introduced as a cluster randomised stepwise implementation from 2016 to 2018. We measure job satisfaction at three time points: before the randomisation took place, one year into the accreditation process and two years into the accreditation process. We use a balanced panel of GPs who have completed all three waves of the survey ( $n = 846$ ) and estimate a series of random and mixed effects ordered logit models. Despite many GPs having negative attitudes towards accreditation, we find no evidence of accreditation affecting GP job satisfaction. However, there are negative associations between job satisfaction and perceiving accreditation as a tool for external control. Policy makers are therefore encouraged to carefully inform about new interventions and identify barriers to diminish pre-existing negative perceptions about the incentive.

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## 1. Introduction

A critical question for policy makers in health care is whether external interventions such as accreditation or pay-for-performance schemes can have the unintended consequences of lowering professionals' job satisfaction. This is particularly pertinent in recent years, where the international shortage of physicians [1] and general practitioners (GPs) ([2,3]) is a major concern worldwide. GPs are reporting high intentions to quit, and GP job dissatisfaction is found to be associated with retirement from general practice [4–9]. Literature reviews conclude that job satisfaction is likely to influence quality of care, GP prescription patterns, patients' adherence to medical treatments and patient satisfaction [10,11], and a recent study showed positive associations between job sat-

isfaction and guideline adherence among physicians with high perceived job control and autonomy support [12]. Hence, when new interventions are introduced in general practice, it is important to understand how they impact GP job satisfaction.

The effect of monetary incentives on GP job satisfaction has been examined in several studies [13–19], while the literature on the effect of non-monetary incentives is sparse [20]. We study the accreditation of Danish general practices during 2016 and 2018 and how this process has impacted GP job satisfaction, thus contributing to the wider literature on the possible impacts of non-monetary incentive schemes. The accreditation process was a relatively low-powered incentive, with no hard penalties imposed if GPs failed. The only penalty imposed was a reputational punishment in making the final assessment publicly available on a website. Moreover, the implementation of the programme was considered resource demanding [21], making it an investment for the GPs. We believe this form of incentive warrants investigation owing to 1) it was perceived as a tool for external control among most GPs (80 %) prior to its implementation, 2) 60 % of GPs expected accreditation to negatively affect their job satisfaction [21], 3) it is similar to other international accreditation systems for which there is little evi-

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dence (O'Beirne et al. 2013), and 4) features of the accreditation process enable a robust statistical approach rarely available in this setting.

The combination of our statistical approach and the design of the accreditation process enhance our contribution. The design involved a staggered rollout of GP accreditation over three years and, importantly, the period at which GPs were accredited was randomly assigned. In this setting, we measured the attitudes GPs held towards accreditation, as well as GP job satisfaction at three different time points. Therefore, we observed GPs as they transitioned through the process while also retaining a control group of GPs awaiting accreditation. The survey used to collect data on job satisfaction also permitted the use of panel data methods, observing the same GPs over time and controlling for unobserved GP effects. The richness of our data allowed GPs to be clustered into general practices as well as allowing tests of attrition bias and representativeness. We estimated a series of random and mixed effects multilevel models, and our findings are robust to different specifications.

## 2. Institutional background

### 2.1. The organisation of general practice in Denmark

Health care in Denmark is tax-financed, and GP services are free of charge with a few exceptions. GPs are contracted with the health care authorities (Danish Regions) under a mixed capitation and fee-for-service system [22]. Approximately two thirds of general practices are organised as single-handed practices employing one third of GPs [23]. In 2016, there were 3421 GPs in Denmark working in 1922 practices ([24]; [25]). In recent years, Denmark has experienced a shortage of GPs [23]. Since 2007, the number of GPs has decreased by approximately 6% [24] and at the same time, extensive burnout among GPs is observed [26].

### 2.2. Accreditation of general practice in Denmark

Over the past few decades, different quality management systems, such as certification, report cards, and accreditation schemes, have been implemented in health care sectors around the world (e.g. [27–29]). Accreditation in primary care was introduced in Australia (O'Beirne, 2013), and since then, a number of countries have implemented accreditation standards in primary care – most of them on a voluntary basis [30]. Although research on accreditation in primary care is sparse (O'Beirne et al., 2013), a few studies have associated accreditation with positive outcomes for quality and patients (e.g., [31]; [32]; [33]) and negative outcomes for GP wellbeing [34]. However, the field is inconclusive and lacks agreement on the effect of accreditation ([28]; [35]; [36,37]).

From January 2016 to December 2018 all general practices in Denmark were incentivised by the mandatory accreditation scheme, which was rolled out in a stepwise cluster, randomised process. The primary goal of the scheme was to improve the quality of care and patient safety [38]. The incentive scheme was part of the collective agreement between The Organisation of General Practitioners in Denmark and Danish Regions. The cluster randomisation was performed on the municipality level. First, the 98 municipalities in Denmark were randomly assigned to each of the three accreditation years 2016, 2017, or 2018. Second, to determine the order of accreditation within the municipalities each general practice in a municipality was randomly drawn. The random draws were performed manually by two employees from IKAS in September 2014.

To be accredited, a health care organisation must meet pre-determined criteria and standards established by a professional

accrediting agency ([30]; [39]). In Denmark, The Danish Institute for Quality and Accreditation in Health care (IKAS) managed the scheme. The scheme consisted of 16 standards that each included several indicators that the general practices should fulfil to a minimum requirement. GPs were assessed on these standards by surveyor teams. To become a surveyor, two requirements should be fulfilled: 1) surveyors should have relevant experience from the health care sector, and 2) surveyors should be employed in the general practice sector. An observer from IKAS could accompany the surveyors on visits. General practices received an e-mail from IKAS with notification about the date for the surveyor visit one year in advance. The assessment was based on defined rating principles and for each indicator fulfilment was assessed as either *met*, *largely met*, *partially met*, or *not met*. Based on the surveyor visit, the Accreditation Award Committee would decide to award an accreditation status of either *Accredited*, *accredited with remarks*, or *not accredited* [38]. The accreditation status holds for three years.

Accreditation was a relatively low-powered non-monetary incentive as there were no hard penalties linked to the scheme. However, the incentive included a risk of reputational punishment, as the final assessment was made publicly available on a website administered by IKAS (<http://www.ikas.dk/afgorelser/almenpraksis/>). Moreover, GPs faced opportunity costs associated with the time-consuming implementation of the programme. Hence, there was a potential negative financial impact of accreditation in general practice. GPs may also have perceived accreditation as centralisation of power and deprivation of GP autonomy. Self-determination theory establishes autonomy as one of three basic psychological needs that are essential for promoting job satisfaction [40]. A baseline survey of the GPs' attitudes towards the accreditation scheme showed that almost half of the GPs had negative attitudes towards the scheme, while only a quarter of the GPs were positive. Also, more than 80 % of the GPs perceived the incentive scheme as a tool for external control, while only about 40 % perceived it as a tool for quality improvement. Moreover, 60 % of GPs expected accreditation to negatively affect their job satisfaction [21]. Based on the arguments above, we hypothesise accreditation to have a negative effect on GP job satisfaction.

## 3. Methods

### 3.1. Data

#### 3.1.1. Job satisfaction and attitude variables

The survey used in this study was specifically designed to measure GP job satisfaction, motivation and attitudes towards accreditation. Questions regarding job satisfaction and attitudes towards accreditation were identical in all three waves of the survey, enabling direct comparison. The surveys were tested for content validity, relevance, acceptability and feasibility. For more information on the development of the wave 1 survey, we refer to Waldorff et al. [21].

We included one question on overall job satisfaction using a four point Likert scale (from very satisfied to very dissatisfied). The job satisfaction question has been used and tested in several GP surveys in Denmark, enabling comparisons across surveys and years (see e.g. [23,41]). One question measured the GPs' attitude towards accreditation using a five point Likert scale (from very positive to very negative). Two independent questions measured the GPs' perceptions of accreditation as supportive (a tool for quality improvement) and/or controlling (a tool for external control) using 5-point Likert scales (from totally agree to totally disagree). The attitudinal questions related to accreditation has been tested and used in a number of studies related to accreditation (see e.g. [4,21,42]). In all three waves, GPs could answer 'don't know' to

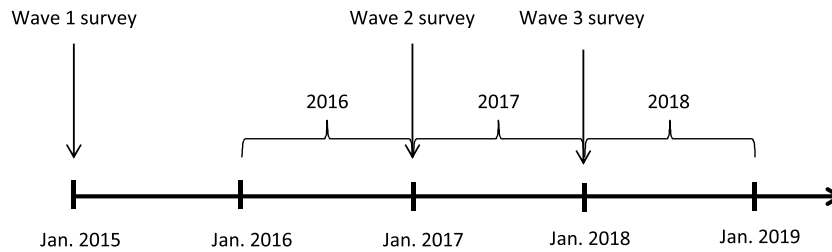


Fig. 1. Timeline.

questions to avoid random answers from uncertain GPs. The only exception to this rule was for GPs' attitude towards accreditation where the 'don't know' option was removed in waves 2 and 3 as it was expected that all GPs had formed an opinion about accreditation by that time.

All waves were administered as electronic surveys. Waves 1 and 2 were e-mailed to all 3403 GPs working under the national public reimbursement system in December 2014, while wave 3 was e-mailed only to the 1146 GPs who answered both previous waves. The first wave was sent out in January 2015; one year ahead of the accreditation program. The second wave was sent out in January 2017; one year into the accreditation process. The third wave was sent out in January 2018; two years into the accreditation process. In all waves of data collection, reminders were sent after two and four weeks. The Danish Medical Association supplied the e-mail addresses.

Due to the timing of the survey waves and the fact that GPs were notified one year in advance of their surveyor visit, GPs can be divided into three groups characterised by their year of accreditation: 2016, 2017 or 2018. Fig. 1 shows the timeline of the project.

[Fig. 1]

### 3.1.2. Accreditation

Information on assignment to year of accreditation was provided by IKAS together with information on the practice provider number.

### 3.1.3. GP and practice characteristics

The Danish Medical Association provided data on practice and GP characteristics at the time of the wave 1 survey. We obtained data of GP age, gender, region (in which of the five Danish regions the practice was located), and practice type (single-handed or shared practice) as well as GP provider number and the professional e-mail addresses for each GP.

### 3.1.4. Job satisfaction – accreditation linkage

By using the provider number, it was possible to link accreditation year with GP and practice characteristics. The e-mail addresses of the GPs served as a unique identifier enabling us to further link the register data with the survey data.

## 3.2. Statistical analyses

We used a balanced panel of GPs who had completed all three waves of the survey. We compared responding GPs to non-responders on age, gender, practice type, region and accreditation year, to assess whether our sample was representative of the population of Danish GPs. We tested for attrition bias to check for any systematic differences between GPs appearing in all three waves and GPs dropping out after wave 1. Moreover, a test for attrition bias between accreditation years in the drop-out sample was conducted to ensure that there was no variation between GPs who dropped out of the sample between accreditation years. In the balanced sample, we tested for successful randomisation between accredita-

tion years on age, gender, practice type, region, job satisfaction and accreditation attitudes. We used chi<sup>2</sup> test statistics for all the above. We also performed descriptive analyses on the job satisfaction and accreditation attitude questions.

We estimated the effect of accreditation on job satisfaction between GPs accredited in 2016, GPs accredited in 2017, and GPs who were not yet accredited but would be so in 2018. We ran three different regression models. As our dependent variable, job satisfaction, has an ordinal scale, we used ordered logistic analyses to estimate the effect of accreditation. As the data is longitudinal, we used random effects to take account of this (Model I). This assumes that the variation between GP satisfaction is random and uncorrelated with independent variables in the model. As accreditation year was our predictor variable this was a reasonable assumption, due to the randomisation of GPs between years. Moreover, we expect that the randomisation strategy minimized the likelihood of omitted variable bias. Also, as accreditation year is time invariant, fixed effects models were not relevant.

Model I can be expressed in terms of a latent linear response, where the observed ordinal measures of job satisfaction,  $Y$ , are generated from the latent continuous responses,  $Y^*$ , such that

$$Y_{it}^* = \beta_1 X_{2016,i} + \beta_2 X_{2017,i} + u_i + \varepsilon_{it} \quad (1)$$

and

$$Y_{it} = \begin{cases} 1 & \text{if } Y_{it}^* \leq k_1 \\ 2 & \text{if } k_1 < Y_{it}^* \leq k_2 \\ \vdots & \\ K & \text{if } k_{K-1} < Y_{it}^* \end{cases} \quad (2)$$

$i = (1, \dots, n)$  GP observations at time  $t = (1, \dots, h)$ .  $X_{2016}$  refers to GPs accredited in 2016, and  $X_{2017}$  to GPs accredited in 2017. The reference year is 2018.  $\varepsilon$  has a logistic distribution with zero mean and variance  $\pi^2/3$  and is independent of the GP random effects  $u$ .  $k$  is a set of cut-points and  $K$  is the number of possible outcomes.

In Model II we take account of the fact that GPs are clustered in general practices. We do this by using mixed effects multilevel ordered logistic regression.

Model II is specified as:

$$Y_{ijt}^* = \beta_1 X_{2016,ij} + \beta_2 X_{2017,ij} + u_j^2 + u_{ij} + \varepsilon_{ijt} \quad (3)$$

where the  $n$  GP observations are organised in a series of  $M$  clusters, corresponding to the number of general practices in the sample, and  $j = (1, \dots, M)$ , with cluster  $j$  consisting of  $n_j$  observations. The random GP and practice error terms are assumed to be independent. The observed ordinal measures of job satisfaction,  $Y$ , are generated from the latent continuous responses,  $Y^*$  as in Eq. (2).

In Model III we include the GPs' attitudes towards accreditation as explanatory variables. Three additional variables, each dichotomised such that they equal 1 if: the GP is very positive/positive towards accreditation; if they strongly agree/agree that accreditation is a tool for quality improvement; or if they strongly agree/agree accreditation is a tool for external control, are

**Table 1**  
Test for representativeness (N = 3403).

Characteristic	Balanced sample (responders) (N = 846) N (%)	Other GPs (non-responders) (N = 2557) N (%)	P-value
<i>Age at baseline</i>			0.000
Below 40	53 (6.3)	176 (6.9)	
40–49	271 (32.0)	770 (30.1)	
50–59	326 (38.5)	774 (30.3)	
60 and older	196 (23.2)	837 (32.7)	
<i>Gender</i>			0.370
Male	426 (50.4)	1333 (52.1)	
Female	420 (49.7)	1224 (47.9)	
<i>Practice type</i>			0.717
Single-handed	273 (32.3)	808 (31.6)	
Partnership	573 (67.7)	1749 (68.4)	
<i>Region</i>			0.544
Capital Region of Denmark	250 (29.6)	774 (30.3)	
Central Denmark Region	213 (25.2)	586 (22.9)	
Region of North Denmark	74 (8.8)	241 (9.4)	
Region Zealand	124 (14.7)	351 (13.7)	
Region of Southern Denmark	185 (21.9)	605 (23.7)	
<i>Accreditation year</i>			0.969 <sup>1</sup>
2016	279 (33.0)	828 (32.4)	
2017	289 (34.2)	843 (33.0)	
2018	278 (32.9)	830 (32.5)	
Missing	0 (0.0)	56 (2.2)	

Notes: <sup>1</sup> The test statistic is performed excluding missing values, since the difference between responders and non-responders is caused by differences in data processing, as IKAS only provided information on missing values in the balanced sample. Hence, they do not reflect true differences in the data sets.

included. This model clusters GPs into practices. Analyses of correlation showed that the two items on perception of accreditation (quality improvement/external control) had a relatively low significance level for correlation (Spearman correlation = -0.09,  $p < 0.001$ ). This ensures us that the two dummy variables can be treated as independent in the regression.

Model III is specified as:

$$Y_{ijt}^* = \beta_1 X_{2016,ij} + \beta_2 X_{2017,ij} + \beta_3 X_{attitude,ijt} + \beta_4 X_{quality,ijt} + \beta_1 X_{control,ijt} + u_j^2 + u_{ij} + \varepsilon_{ijt} \quad (4)$$

$X_{attitude}$  refers to GPs who are positive towards accreditation,  $X_{quality}$  refers to GPs who perceive accreditation to be a tool for quality improvement, and  $X_{control}$  to GPs perceiving accreditation as a tool for external control. Model III is similar to Model II on all other aspects.

We performed likelihood ratio tests comparing the different models to see which model performed best in terms of improvements in fit. All standard errors were specified as robust and allowed for intragroup correlation at the highest level in the mixed effects ordered logit models. The standard errors specified are robust to heteroscedasticity beyond the clustering. To reduce information loss, *don't know* responses and missing values on the job satisfaction question and the attitudinal questions were mean imputed using closest integer for each question. As a robustness check we also performed the analyses excluding respondents with missing values and don't know answers. It is not necessary to control for confounders as GPs were randomly allocated to accreditation years but as a robustness check we also ran the models controlling for GPs age, gender, practice type and region. Moreover, we ran models including interaction terms on accreditation year and attitudinal variables. Finally, a model clustering at the higher municipality level in addition to the practice level did not perform better than models clustering on GP practice level alone. Importantly, our findings are robust to the different model specifications (Appendix A4 shows the robustness checks based on the Model III specification). All analyses were performed in Stata 15. Random effects ordered logistic regression models were performed using the *xtologit* command, while mixed effects multilevel ordered logis-

tic regression models were performed using the *meologit* command [43].

#### 4. Results

In total, 846 GPs completed all three survey waves (see the flowchart in Fig. A1 in Appendix A). This corresponds to 25 % of all GPs in Denmark. Of these, 279 GPs were allocated to be accredited in 2016, 289 to be accredited in 2017, and 278 to be accredited in 2018.

Representativeness is tested in Table 1, confirming that the balanced sample is representative to the GP population with respect to gender, region, practice type and accreditation year. There are less GPs in the age group 60 and older. This is expected as the older GPs drop out between waves due to retirement.

Descriptive statistics in Table 2 show that GP job satisfaction is high in all three waves: more than 80 % of the GPs are satisfied or very satisfied with their jobs. GPs' attitudes towards accreditation have become more positive and by wave 3, 28 % have positive or very positive attitudes towards accreditation. More GPs agree or strongly agree that accreditation is a tool for quality improvement (41 % in wave 1, 47 % in wave 2 and 48 % in wave 3), just as a few more GPs agree or strongly agree that accreditation is a tool for external control (83 % in wave 1, 80 % in wave 2 and 85 % in wave 3).

Table 3 shows the results from our three different model specifications (Model I, Model II and Model III). We see that the coefficients for *Accreditation 2016* and *Accreditation 2017* are positive but not statistically significant in all three models (ranging from 0.05 (Model III) to 0.10 (Model I) for *Accreditation 2016*) and 0.09 (Model III) to 0.16 (Model I) for *Accreditation 2017k*). This implies that the job satisfaction of GPs who have undergone accreditation in 2016 and 2017 does not differ from those who will be accredited in 2018. Hence, across all models (Model I-III) our hypothesis, that accreditation has a negative effect on GP job satisfaction, is rejected and we find no evidence that accreditation affects GP job satisfaction. Model III shows that job satisfaction is statistically significant and positively associated with having positive attitudes towards accreditation (*Attitude*) and agreeing that accreditation is a tool for quality improvement (*Quality*). Moreover, job satisfaction is sta-



**Table 2**  
Descriptive statistics (N = 846).

Characteristic	Wave 1(N=846) N (%)	Wave 2(N=846) N (%)	Wave 3(N=846) N (%)
<i>How satisfied are you, all in all, with your job as a GP?</i>			
Very satisfied	251 (29.7)	255 (30.1)	215 (25.4)
Satisfied	438 (51.8)	463 (54.7)	477 (56.4)
Dissatisfied	90 (10.6)	87 (10.3)	105 (12.4)
Very dissatisfied	17 (2.0)	15 (1.8)	28 (3.3)
Don't know	20 (2.4)	26 (3.1)	21 (2.5)
Missing	30 (3.6)	n.a.	n.a.
<i>What is your attitude towards accreditation?</i>			
Very positive	19 (2.3)	24 (2.8)	19 (2.3)
Positive	181 (21.4)	191 (22.6)	213 (25.2)
Neutral	242 (28.6)	266 (31.4)	265 (31.3)
Negative	238 (28.1)	259 (30.6)	256 (30.3)
Very negative	153 (18.1)	106 (12.5)	93 (11.0)
Don't know	13 (1.5)	n.a.	n.a.
<i>Accreditation is a tool for quality improvement</i>			
Strongly agree	53 (6.3)	53 (6.3)	42 (5.0)
Agree	290 (34.3)	348 (41.1)	361 (42.7)
Neither agree or disagree	226 (26.7)	212 (25.1)	206 (24.4)
Disagree	131 (15.5)	134 (15.8)	152 (18.0)
Strongly disagree	110 (13.0)	89 (10.5)	82 (9.7)
Don't know	19 (2.3)	10 (1.2)	3 (0.4)
Missing	17 (2.0)	n.a.	n.a.
<i>Accreditation is a tool for external control</i>			
Strongly agree	331 (39.1)	280 (33.1)	288 (34.0)
Agree	369 (43.6)	394 (46.6)	434 (51.3)
Neither agree or disagree	82 (9.7)	112 (13.2)	86 (10.2)
Disagree	21 (2.5)	35 (4.1)	26 (3.1)
Strongly disagree	10 (1.2)	12 (1.4)	8 (1.0)
Don't know	16 (1.9)	13 (1.5)	4 (0.5)
Missing	17 (2.0)	n.a.	n.a.

**Table 3**  
Regression analyses.

Variables	Model I Coefficients (95 % CI)	Model II Coefficients (95 % CI)	Model III Coefficients (95 % CI)
Accreditation 2016	0.10 (-0.41;0.62)	0.07 (-0.47;0.60)	0.05 (-0.47;0.57)
Accreditation 2017	0.16 (-0.37;0.69)	0.13 (-0.42;0.68)	0.09 (-0.45;0.63)
Attitude	n.a.	n.a.	0.61 (0.26;0.96) *
Quality	n.a.	n.a.	0.42 (0.13;0.71) *
Control	n.a.	n.a.	-0.39 (-0.69;-0.09) *
<i>Random effect parameters</i>			
	Var (95 % CI)	Var (95 % CI)	Var (95 % CI)
GP level	7.78 (6.31;9.59)	5.07 (3.55;7.22)	4.93 (3.50;6.94)
Practice level	n.a.	2.74 (1.55;4.86)	2.41 (1.31;4.42)
<i>Intraclass correlation</i>			
	ICC (95 % CI)	ICC (95 % CI)	ICC (95 % CI)
GP level	0.70 (0.66;0.74)	0.70 (0.66;0.75)	0.69 (0.64;0.73)
Practice level	n.a.	0.25 (0.14;0.40)	0.23 (0.12;0.38)
<i>Fit statistics</i>			
Observations	2538	2538	2538
LL model	-2149.3	-2143.7	-2124.9
LL null	-2149.5	-2143.8	-2143.8
Chi <sup>2</sup> statistics	0.35	0.21	36.68
Prob > chi <sup>2</sup>	0.838	0.900	0.000
AIC	4310.6	4301.5	4269.8
BIC	4345.7	4342.3	4328.2
LR test <sup>1</sup> , chi <sup>2</sup> (test statistics)	n.a.	5.99 (11.15)	7.81 (37.63)

Notes: \* p < 0.05; <sup>1</sup> Model II is tested against Model I; Model III is tested against Model II.

tistically significant and negatively associated with agreeing that accreditation is a tool for external control (*Control*).

The random effects parameters are statistically significant and positive in all three models justifying the use of hierarchical models. The intraclass correlation shows the correlation between job satisfaction within a GP in a given practice over years and between GPs within a general practice. We find that job satisfaction is highly correlated within GPs (ICC = 0.70 in model I and II and 0.69 in Model III), and slightly correlated within general practices (ICC = 0.25 in Model II and 0.23 in Model III). The likelihood ratio tests in Table 3 show that Model II taking clustering of general practices into account fits data better than the random effects ordered logit model (Model I)

(test statistics equals 11.15 while *chi*<sup>2</sup> statistics equals 5.99 with two degrees of freedom). Model III, where attitudinal variables are also included as explanatory variables fits data better than any of the other models (test statistics equals 37.63 while *chi*<sup>2</sup> statistics equals 7.81 with three degrees of freedom; AIC, BIC and *chi*<sup>2</sup> statistics also show a better fit).

The test for attrition bias shows that there is no detectable bias between GPs filling in all three waves of the questionnaire and GPs dropping out after the first wave, except for age and perception of accreditation as a tool for quality improvement (Table A1 in Appendix A). The former is expected due to retirement. The latter is characterised by fewer GPs in the drop out group reporting indif-

ference (neither agree nor disagree) but more GPs in the adjacent response disagree. Importantly, the test for attrition bias between accreditation years shows that there is no variation in attitudes between accreditation years in the drop out sample or on any of the other variables (Table A2 in Appendix A). Moreover, and reassuringly, job satisfaction is evenly distributed between remaining GPs and drop outs and between accreditation years in the drop out sample. The test for successful randomisation shows that randomisation was successful at the 5% significance level on all variables (Table A3 in Appendix A).

## 5. Discussion

We find no evidence that a non-monetary incentive, in the form of accreditation, affects GP job satisfaction. This finding comes at a time when Danish GPs have a relatively high level of job satisfaction, in contrast to other countries, such as England, where in 2017 many GPs reported being dissatisfied [7]. In the light of current problems with GP shortages and burnout, this is an important result. Policy makers introducing external control instruments to improve quality of care are unlikely to alter GP job satisfaction on average, at least within the framework of accreditation as it was implemented in Denmark. We found, however, that the GPs' perceptions of the intervention were associated with their job satisfaction. GPs perceiving accreditation as a tool for external control were less satisfied with their jobs compared to GPs not having this perception. According to Bovey and Hede [44] proper provision of information may bring down potential resistance towards change. Hence, to diminish pre-existing negative perceptions, e.g. due to concerns of the unknown, policy makers are encouraged to thoroughly inform health care professionals about new interventions and carefully identify barriers before implementation.

Quantitative studies investigating monetary incentives and their impact on job satisfaction from England [19] and Spain [15] also found no effect on job satisfaction. In that context, our results may not be surprising, as we study a non-monetary incentive which is relatively low-powered compared to the incentives examined in the other studies.

One explanation for our finding that there is no evidence in support of accreditation affecting GP job satisfaction could be found in the positive surveyor assessments. As most GPs became accredited without remarks, the threat of reputational punishment disappeared. Another explanation can be found in the expectation disconfirmation theory [45–47] stating that when workers have negative a priori expectation towards something, and when these expectations to some extent are disconfirmed once the incentive is introduced, job satisfaction will increase. Our finding that GPs become less negative towards the incentive over time, supports this explanation.

Due to the cluster-randomised nature of the incentive and the panel structure of our data, it was possible to perform a rigorous test on how the scheme affected GP job satisfaction. Due to richness in our data, we could make extensive tests for attrition bias and representativeness. These are the key strengths of our study. We find no evidence of attrition bias, and our sample is representative to the general GP population on observed variables. This suggests that our results are valid and generalizable to the Danish GP population. However, as we cannot test for representativeness on job satisfaction and attitudinal variables, accreditation may have a different effect on these parameters for GPs not included in our sample. Still, we see it as a strength that one quarter of all GPs in Denmark are included in our study.

A potential limitation of our study is the fact that accreditation, by definition, is a control instrument where surveyors assess whether a practice fulfils the requirements. Hence, GPs agreeing to

accreditation being a tool for external control may merely ascertain that this is the case, rather than seeing it as a negative consequence of the incentive scheme. Some GPs may also view the control of general practice as a good approach to identify *rotten apples*. However, as we find a negative correlation between job satisfaction and the perception of accreditation as a tool for external control, this seems on average not to be the case. Another potential limitation may be that job satisfaction reduced before the accreditation of GPs started as a result of the policy announcement. Moreover, the possibility of learning effects between GPs allocated to accreditation at different time points, which could impact GP job satisfaction, cannot be excluded. Importantly, even if an announcement effect occurred on the absolute levels of job satisfaction, our results would not be affected, as we investigate the relative levels of job satisfaction between randomised groups of GPs. However, randomisation would not solve potential problems with learning effects.

Job satisfaction is only one measure of GP wellbeing and accreditation may impact other aspects of GPs working lives, e.g. burnout or perceived workload. Importantly, it has been shown that there is no association between accreditation of Danish general practice and GP retirement in the short run [4], just as there is no crowding out of intrinsic motivation in relation to accreditation [42]. However, as more regulatory systems are being implemented in general practice, it is crucial that persistent monitoring of GPs wellbeing is performed to enable timely interventions aimed at avoiding ill health, early retirement and reduced quality in treatment, which are some of the consequences of the organisational changes to the English NHS [6].

## 6. Conclusion

GP job satisfaction is insensitive to the non-monetary incentive scheme implemented in Danish general practice in the form of mandatory accreditation. However, GPs' perceptions of the intervention are associated with their job satisfaction, and we find that GPs with lower job satisfaction tend to be those who perceive accreditation negatively. Yet, despite being perceived primarily as a tool for external control, we find no evidence of accreditation affecting GP job satisfaction. Hence, even when non-monetary incentives are perceived as control instruments by most GPs, they may not affect GP job satisfaction at the aggregate level.

## Ethics

Complying with European data protection rules, the University of Southern Denmark approved the data processing activities regarding this project and registered the project (project number 10.301). Participation in the study was recommended to GPs by the Danish College of General Practice; Committee of Multipractice Studies in General Practice (file number 29–2016). The Regional Scientific Ethical Committees for Southern Denmark assessed the study and concluded that no further ethical approval was needed cf. section 14, subsection 1 in the Act on Research Ethics Review of Health Research Projects (file number S-20152000–178).

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## Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.healthpol.2020.04.002>.

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