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**United, we can be stronger! French integrated general practitioners had better chronic care follow-up during lockdown**

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# United, we can be stronger! French integrated general practitioners had better chronic care follow-up during lockdown

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## Abstract

**Background:** Given the importance of continuous follow-up of chronic patients, we evaluated performance of French private practice general practitioners (GPs) practicing in multi-professional group practices (MGP), compared to their peers practicing outside MGP, regarding chronic care management during first Covid-19 lockdown in spring 2020.

**Methods:** The cross-sectional web questionnaire of 1,191 GPs took place in April 2020. We exploit self-reported data on: 1) frequency of consultations for chronic patients during lockdown compared to their “typical” week before the pandemic, along with 2) GPs proactive behaviour when contacting their chronic patients. We use probit and seemingly unrelated probit models (adjusted for endogeneity of choice of engagement in MGP) to test whether GPs in MGP had significantly different responses to the Covid-19 crisis.

**Results:** We find that GPs in MGP were less likely to experience a drop in consultations related to complications of chronic diseases. They were also more proactive to contact their chronic patients.

**Conclusions:** Quick policy response is needed to alleviate difficulties encountered by GP practicing outside MGPs. Results advocate for further development of integrated care in the long run.

**Keywords:** General Practitioners, France, Provider-Sponsored Organizations, Long-Term Care

**JEL Classification:** I14, I18

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# 1 Introduction

The Covid-19 pandemics and its subsequent health system responses already had lots of consequences on the most vulnerable populations. Chronic patients in particular are severely affected by the pandemic (Nicodemo et al., 2020; Richardson et al., 2020; Zhou et al., 2020a). Besides, for the past 20 years, it has been pointed out that the evolution of primary care is one of key components of health systems to better prevent and manage chronic patients (WHO, 2002). Integration of primary care practices, in particular, has been identified as a plausible determinant of a “good” chronic care model, as it allows a more efficient combination of the healthcare resources (Bodenheimer et al., 2002a,b).

In France, private practice general practitioners (GP) ensure more than 90% of primary care. As in other developed countries, a clear trend towards care integration is observed: in a 2010 survey, 54% of GPs indicated practicing in a group; there were already 61% in 2019 (81% among GPs younger than 50 years old) (Chaput et al., 2019). However, most of these group practices only share premises, and/or non-clinical and back-office functions. Up to now, the most advanced form of integrated healthcare teams in France is the so-called multidisciplinary group practice (MGP) [in French: “*maison de santé pluridisciplinaire*”]. A MGP is composed of at least two GPs and one paramedic and has a public health project certifying the practice integration reported to local health authorities. The policy was launched in 2007 and has proven to be extremely popular among physicians: in 2020, more than 1,300 MGPs were actively operating compared to less than 20 in 2008 (Chevallard and Mousquès, 2020). They have demonstrated some efficiency gains in terms of quantity of care delivered, e.g. longer patient lists and more acts (Mousquès and Daniel, 2015). However, few French studies really discuss the gains related to integrated practices in terms of quality of care (Loussouarn et al., 2020; Mousquès and Daniel, 2015), at least in France where the impact of MGP cannot be studied in the framework of a randomized study. Same lack of evidence is observed in the international literature: “*Changes (towards integrated care and multidisciplinary practices) have been implemented on less than robust evidence*”, as pointed out by Lalani et al. (2020).

This article aims at evaluating MGPs’ performance regarding chronic care management. Continuous follow-up of chronic patients being essential for better quality of care, the current pandemic, beyond the calamity it represents, provides an opportunity to examine how GPs in MGPs can adapt their practices under these unusual conditions.

## 2 Methods

### 2.1 Study population

We used data from the national panel of French private practice GPs, set up in 2018 and designed to collect information about GPs' medical practices, working conditions and opinions on public health policies.

GPs were randomly selected from a French exhaustive database of health professionals as of January 1<sup>st</sup>, 2018. Sampling was stratified for gender, age, workload (annual number of consultations, including home visits; in terciles) and practice location in low GP density areas. The panel is representative of GPs practicing in France (except Mayotte). GPs planning to retire or to move before the end of data collection, those exclusively practicing alternative medicine as well as those with few gatekeeping duties (less than 200 patients) were excluded. The National Authority for Statistical Information (*Commission Nationale de l'Information Statistique*) approved the panel.

### 2.2 Procedure and questionnaire

A special Covid-19 wave was decided in March 2020 in order to study GPs practices in face of the pandemics. The web-survey took place between April, 9 and April, 21 2020 during the lockdown. From the original Panel, 2,761 GPs were contacted and 1,191 GPs (43.1%) have responded (no monetary compensation was offered to respondents).

We exploit the part of the questionnaire focused on the impact of the lockdown on GPs' activity (the week before the survey compared to a "typical" week before pandemic). A "don't know" answer was also included in each item of the questionnaire.

We used an indicator variable of the intensity of the Covid-19 pandemic at the *département* level. This indicator was constructed by Directorate for Research, Studies, Assessment and Statistics (DREES, French Ministry of Health) from National Institute of Statistics and Economic Studies (Insee) Covid-19 mortality data collected between March,1 and April, 20 2020 (Verger et al., 2020). We use a dummy variable to isolate the most affected *départements*, where an average change in excess mortality rate was 110.5%.

### 2.3 Statistical analysis

To correct for possible systematic non-response bias in our subsample, we used weights to match the nationwide GP population for the four main stratification variables: age, gender, workload and GP density.

We defined a set of dependent variables regarding chronic care management: (1) estimated variation in the number of weekly consultations related to complications of chronic diseases ("Over the past week, what was the change in the frequency of consultation related to complications of previously stable chronic diseases, compared to a typical week before the epidemic of Covid-19?"), as well as (2) whether the GP

makes a proactive effort to contact herself her chronic patients (“To address the current care needs of your most at-risk chronic patients, do you take an active approach to contacting them (by phone or other means of communication)?”).

We use probit regressions to estimate the following model:

$$Y_i = \alpha_i + \beta_1 MGP_i + \beta_2 Covid - 19 indicators_i + \beta_3 Control variables_i + \epsilon_i$$

where

- $Y_i$  is one of the dependent variables described above,
- $MGP_i$  is a dummy variable indicating practicing in MGP,
- $Covid-19 indicators_i$  include the indicator variable of the intensity of the pandemic presented above, as well as GPs’ perceptions regarding severity of Covid-19 (from 0 ‘not at all severe’ to 10 ‘extremely severe’) and their estimation of French population that would be contaminated by Covid-19 by the end of 2020 (less than 50%, 50% to 75%, more than 75% of the population),
- and the control variables include GP i’ personal and professional characteristics: gender, age (in tertiles), workload (in tertiles), GP density (practice located in the area with lowest (first decile) GP density in 2018).

To address the possible endogeneity of choice of engagement in MGP, we estimate the seemingly unrelated probit model:

$$\begin{cases} MGP_i = \alpha_i + \gamma_1 women_i + \gamma_2 age_i + \gamma_3 workload_i + \gamma_4 lowest GP density_i \\ \quad + \gamma_5 Pioneer departement_i + \delta Installation reasons_i + \epsilon_{i1} \\ Y_i = \alpha_i + \beta_1 MGP_i + \beta_2 Covid - 19 indicators_i + \beta_3 Control variables_i + \epsilon_{i2} \end{cases}$$

where the equation related to engagement in MGP contains several variables that might influence the GPs’ choice, but are unlikely to have an impact on the chronic care management strategies during the sanitary crisis:

- $Pioneer departement_i$  is a dummy variable indicating practices located in *département* that have early adopted multi-professional group practices (before 2013),
- $Installation reasons$  is a set of dummy variables regarding the selection criteria prior to the choice of the current practice location (healthcare services available, possibility to create or join a group practice, search for an area with low GP density, available infrastructure for the family, or previous medical studies (a previous experience, e.g. internship, in the area)).

These two sets of instruments are relating to the past behaviour of GPs or the behaviour of peers in the same *département* before 2013. This strengthens the fulfilment of the exclusion condition. As seemingly unrelated probit models do not allow testing for overidentification restrictions, we follow the procedure described in [Wooldridge \(2010\)](#). Using a linear probability model, we calculate the fitted value for  $MGP_i$ . Next, we estimate the model described above by a Two-Stage Least Squares using the fitted value for  $MGP_i$ . Having this adapted framework at our disposal, we were able to test the statistical properties of the instrumental variables using Sargan overidentification test.

All analyses were conducted with Stata 14 (StataCorp. College Station, Texas).

### 3 Results

Almost 40% of GPs were female, 34% were younger than 50 years old (44% in MGP; Table 1). Six percent were practicing in an area with the lowest GP density, 13% practiced in a multiprofessional group practice. Twelve per cent of GPs were located in the most affected by Covid-19 *départements* (9% in MGP). The average perceived severity of Covid-19 was around 7.8 (out of 10). Forty-four percent of GPs estimated that by the end of 2020 less than half of French would be contaminated by Covid-19 and 13% believed that 75% or more would be contaminated.

Seventy percent of GPs estimated that, compared to their “typical” week before pandemic, the frequency of consultations related to complications of chronic diseases has dropped. Half of GPs declared to contact their chronic patients by themselves (62% in MGP).

Table 1: Descriptive statistics, French private practice general practitioners (n=1,191)

%	Total	in MGP	not in MGP
<b>GPs’ personal and professional characteristics</b>			
<b>Female</b>	39.18	38.90	40.46
<b>Age</b>			
< 50 years old	33.64	43.62***	33.98
50-59 years old	40.48	44.15***	39.14
≥ 60 years old	25.88	12.24***	26.87
<b>Workload</b>			
Q1	23.40	17.58	24.41
Q2-Q3	50.70	57.82	50.10
Q4	25.90	24.60	25.49
<b>Lowest GP density (1st decile), 2018</b>	6.31	9.14*	6.08
<b>Multiprofessional group practice (MGP)</b>	12.65	-	-
<b>Covid-19</b>			
<b>The most affected <i>départements</i></b>	12.25	8.59**	14.11
<b>Estimated severity [0;10] (mean, standard error)</b>	7.78 (0.09)	7.65 (0.13)	7.79 (0.11)
<b>Estimated share of population contaminated by the end of 2020</b>			
<50%	44.24	42.19	46.54
50-75%	42.46	40.94	40.16
≥ 75%	13.31	16.87	13.30
<b>GPs’ practices during the pandemics</b>			
Number of consultations related to complications of chronic diseases dropped during the week before the survey compared to a “typical” week before pandemic	69.74	61.52	69.60
Pro-active to contact chronic patients	50.16	61.65**	48.11
Observations	1,191	254	839

Source: DREES, ORS and URPS Provence-Alpes-Côte d’Azur and Pays de la Loire, 4<sup>ème</sup> Panel d’observation des pratiques et des conditions d’exercice en médecine générale de ville.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$  (chi-squared test)

Note: weighted data.

GPs: general practitioners; MGP: multi-professional group practices



Regarding the frequency of consultations related to complications of chronic diseases (Table 2), the estimated value of the rho coefficient first advocates for the use of the seemingly unrelated probit model; a result that confirms the impact of the self-selection bias for GPs in MGP. Beyond these technical considerations, in this regression (column 2), GPs in MGP were less likely to experience a drop in these consultations (-45.3%).

As far as the second behaviour in Table 2 is concerned: ‘pro-active to contact chronic patients’, the rho coefficient of the seemingly unrelated probit estimation indicates, this time, an absence of effect of the self-selection into MGP and that the simple probit model is sufficient to give the proper estimate. In the results (column 3), GPs in MGP were more proactive to contact their chronic patients (+13.4%). This exactly counteracts the impact of practising in the lowest GP density area (-14.0%). In addition, those who believed that Covid-19 will contaminate less than 50% of the population were less likely to contact their chronic patients.

As for the instruments used, Sargan test results indicated the validity of the instruments ( $p=0.11$  and  $0.09$  respectively), however the instruments were weak: the F statistic was below the commonly-used threshold of 10.

Table 2: Factors associated with general practitioners' practices during the lockdown (n=1,191)

Marginal effects	Number of consultations related to complications of chronic diseases dropped during the week before the survey compared to a “typical” week before pandemic		Pro-active to contact chronic patients	
	Probit	Bivariate probit	Probit	Bivariate probit
<b>Multiprofessional group practice</b>	-0.0199 (0.0564)	-0.4527*** (0.0975)	0.1344** (0.0579)	0.3636*** (0.1293)
<b>The most affected <i>départements</i></b>	0.0418 (0.0731)	0.0743 (0.0534)	-0.0817 (0.0919)	-0.0662 (0.0952)
<b>Estimated severity [0;10]</b>	-0.0023 (0.0118)	-0.0076 (0.0098)	0.0146 (0.0138)	0.0176 (0.0137)
<b>Estimated share of population contaminated by the end of 2020 (ref.&lt;50%)</b>				
50-75%	-0.0977 (0.0631)	-0.0527 (0.0507)	0.1887*** (0.0618)	0.1500** (0.0636)
≥75%	-0.0466 (0.0723)	-0.0223 (0.0593)	0.1532** (0.0751)	0.1268* (0.0759)
<b>Female</b>	0.0083 (0.0556)	-0.0186 (0.0482)	0.0810 (0.0618)	0.0948 (0.0634)
<b>Age (ref.&lt;50 years old)</b>				
50-59 years old	-0.0874 (0.0605)	-0.0951* (0.0547)	0.0489 (0.0648)	0.0409 (0.0646)
≥ 60 years old	0.0590 (0.0659)	0.0432 (0.0606)	-0.0131 (0.0811)	-0.0144 (0.0873)
<b>Workload (ref. Q1)</b>				
Q2-Q3	-0.0941 (0.0642)	-0.0645 (0.0534)	-0.1294* (0.0695)	-0.1516** (0.0720)
Q4	-0.0167 (0.0843)	-0.0127 (0.0719)	-0.1248 (0.0896)	-0.1114 (0.0907)
<b>Lowest GP density (1st decile)</b>	0.0763 (0.0501)	0.0635 (0.0425)	-0.1396** (0.0663)	-0.1464** (0.0656)
<b><math>\rho</math> (coefficient)</b>	-	0.8701*** (0.2532)	-	-0.5758 0.4544
Observations	680	641	704	665

Source: DREES, ORS and URPS Provence-Alpes-Côte d'Azur and Pays de la Loire, 4<sup>ème</sup> Panel d'observation des pratiques et des conditions d'exercice en médecine générale de ville.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Note: weighted data.

Standard errors in brackets

Marginal effects calculated for: non-MGP, GPs not in most affected *départements*, male GPs, youngest GPs, with lowest workload, those not practicing in lowest GP density areas.

GPs: general practitioners; MGP: multi-professional group practices

## 4 Discussion

In France, GPs are the cornerstone of the health system: in 2017, around 80% of patients consulted a GP in the past 12 months (Ricroch and Seimandi, 2020). Integration of care remains one of the current challenges of the French healthcare system. Despite a clear trend towards integration, the 2019 French GP survey indicated that while 61% of respondents declared practicing in a group practice, 57% among them stated that their practice was composed exclusively of GPs (Chaput et al., 2019). Indeed, only 13% of GPs in our sample worked in a multidisciplinary group practice.

Integrated care in primary care settings is an organizational adjustment strongly promoted by the French government, in order to improve access to care and quality of care, particularly for populations living in deprived areas (Loussouarn et al., 2020; Silhol et al., 2020). However, demonstrating this improvement is sometimes difficult. Lots of studies have mixed results and hardly demonstrate a definite impact of integrated care on the quality of care - quality is hard to document in family medicine (Kerrissey et al., 2017; Shuemaker et al., 2020; Singer et al., 2020; Teno et al., 2017; Zhou et al., 2020b). Using the follow-up of chronic patients during lockdown as a criterion for quality of care, this study provides the opportunity to test whether quality of care was enhanced by this type of organizational adjustment during an unprecedented health crisis.

The continuous follow-up of chronic patients is a necessary condition for the quality of care. In the times of pandemic, while most resources are allocated to fight with Covid-19, it is crucial to ensure continuity of care for already vulnerable population such as chronic patients (Huet et al., 2020; Mercier et al., 2020).

Our findings are in line with Loussouarn et al. (2020) who report that GPs in integrated care are “more productive”. Using our own data, we obtain that these GPs can indeed transform these labour-productivity gains to the benefit of the patient. In times of sanitary crisis, GPs in MGPs are more likely to ensure continuity of care for their chronic patients than those outside MGPs. This result is established while taking into account the selection effect that may occur from GPs in MGP, eliminating the main risk of false causal inference. This qualitative value-added of GPs in MGP probably results from better organization, especially in terms of task division in group practices. For instance, it is rather common that MGP nurses are in charge of the follow-up of chronic patients. In addition, sanitary guidelines could be easier to implement in larger practices, e.g. , they might have a possibility of receiving potentially infected patients in separate waiting rooms.

These results can provide recommendations both for the short run and for the long run management of chronic patients. In the short run, a solution could be to appoint secretaries or medical assistants (as introduced to national collective agreement in 2019) in charge of the follow-up of chronic patients. In the long run, it advocates for further development of integrated care all across the national territory. However, further research is necessary to demonstrate the added value of integrated practices once the pandemic setup is over.

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