RESEARCH PAPER

A Case Study on the Substitution Effect between the Length of GP Consultation and Drug Prescribing Practices

Étude de cas sur l'effet de substitution entre la durée de consultation chez l'omnipraticien et les pratiques de prescription de médicament

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Abstract

The relationship between the length of GP consultation in primary care and drug prescribing practices is still a subject for debate. Patients' morbidity, generating both very long consultation times and large volumes of prescriptions, may mask an underlying substitution among GPs regarding the length of time they offer to patients versus the alternative of prescribing pharmaceuticals. We propose to pursue the debate by analyzing the results of a case vignette, submitted to 1,900 GPs, in which patient morbidity is controlled for by definition. In this case – a hypothetical patient suffering from mild depression – we observe the choice between three types of treatment strategy: psychotherapy, drug therapy and a combination of the two. We observe that the GPs with the highest consultation rates were twice as likely to adopt the drug therapy option as their counterparts with lower rates of consultation. Moreover, for more than 50% of drug prescriptions, the medical decisions contradict clinical practice guidelines.

Résumé

La relation entre la durée de consultation dans les soins primaires et les pratiques de prescription est un sujet qui suscite encore des débats. La morbidité des patients, qui donne lieu à de longues consultations et à de grandes quantités de prescriptions, peut dissimuler un effet de substitution chez les omnipraticiens entre temps consacré aux patients et prescription de produits pharmaceutiques. Nous proposons de poursuivre le débat en analysant les résultats d'une vignette, présentée à 1900 omnipraticiens, dans lequel la morbidité du patient est, par définition, contrôlée. Dans ce cas (un patient hypothétique souffrant de dépression légère), nous étudions le choix entre trois types de stratégies pour le traitement : la psychothérapie, la pharmacothérapie et une combinaison des deux. Nous observons que les omnipraticiens ayant les plus hauts taux de consultation sont deux fois plus enclins à opter pour la pharmacothérapie que leurs pairs qui ont de plus bas taux de consultation. De plus, dans plus de 50 % des cas de prescription, la décision médicale ne respecte pas les lignes directrices de la pratique clinique.

Many studies have sought to demonstrate a correlation between the length of physicians' consultation and the number of prescriptions written; for example, a 1972 study highlighted that 52% of GPs declared that they would prescribe less medicine if they had more time available during consultations (Dunnel and Cartwright 1972). Several subsequent studies have confirmed a negative relationship between the length of consultations and the number of pills prescribed: in general, prescribing pharmaceutical products is seen as an

opportunity for "substitution," enabling the doctor to save time with regard to patient education or psychological support (Dugdale et al. 1999; Freeman et al. 2002; Garnier and Marinacci 2001). Other results demonstrate the opposite effect: the longer the consultation, the more prescriptions are written (Amar and Pereira 2005; Heaney et al. 2002). Finally, other studies find no significant relationship between the length of a consultation and prescriptions written (Deveugele et al. 2002; Ridsdale et al. 1989).

These studies do not distinguish among the patients' illnesses, thereby potentially skewing the findings. Patients who suffer from serious pathologies require both long consultation times and numerous prescriptions. However, some doctors see chronic patients who simply need to renew prescriptions: then the consultation time is short, but the number of prescriptions per visit is high. Such heterogeneity in practice can suggest a correlation between the length of consultation and number of prescriptions, one that falsely blurs a fundamentally negative relationship based on the substitution of consultation time vis-à-vis prescription of medicines.

In our study protocol, the problem of heterogeneity does not arise because our starting point is a single, homogenous "clinical case" presented as a case vignette: all doctors in the survey were faced with the same hypothetically depressed patient. This approach could be compared to the methodology of the "standardized patient," used to measure variations in medical practice (people trained to portray patient roles during consultation; see, for example, Hutchison et al. 1998; Beaulieu et al. 2003). Case vignettes and case studies are a relatively cost-effective means of surveying many physicians, although the case submitted necessarily remains hypothetical. The analyses presented in this paper are based on this approach, with the aim of clearly documenting the relationship between the doctors' patient turnover rate and the number of prescriptions written as a treatment option.

Methods

To create the sample, 4,592 independent GPs from five French regions with varying medical densities were contacted first by mail and then by telephone: a professional interviewer asked the physicians to participate, requested their consent and conducted the survey using a computer-assisted telephone interview (CATI). The questionnaire was previously pilot-tested with 20 GPs to check its clarity, length and face validity.

The initial random sampling was stratified by sex, age (under 45, 45 to 53 and 53 or over) and the type of area (rural, suburban and urban). Of the initial 4,592 GPs, 31.6% (n=1,453) refused to participate in the study. These physicians did not differ from the participants with respect to sex (p=0.22) or type of practice area (p=0.84), but they were older (p=0.001). In addition, 16.2% (n=744) were unreachable (because they were dead, retired, sick, had moved, or because the investigator had the incorrect telephone number) and 10.8% (n=494) were either moving or retiring in under six

months or practised exclusively in a specific type of treatment (acupuncture, homeopathy, etc.), making them ineligible.[1] Eventually, 1,901 doctors participated in the survey. As the sample structure could not be considered significantly different from the actual population structure of French GPs according to the three stratification criteria cited above, the representativeness of the sample was confirmed (*p*-value of the test of difference in proportion = 0.84).

The questionnaire covered the general working conditions of these 1,901 GPs. The variables relate to the doctors' socio-demographic data (age, sex, city and region of activity, etc.) or to their activity (billing sector, work in a group practice, participation in PPE [professional practices evaluation] or CME [continuing medical education]). A measure of GPs' sensitivity to the risks of polypharmacy was included. It was built by scoring physicians' level of agreement to five polypharmacy risk-reduction actions (see Figure 1): if GPs agreed with at least three propositions, we considered that they were sensitive to the risk of polypharmacy. Other objective information concerning the doctors' activity was provided through a matching process with the files of the Assurance maladie (French social security service), which in France registers all consultations made by every GP for a given period (month or year). These files enabled us to calculate the average length of consultation based on the total duration of activity declared by the doctor, divided by the number of procedures.[2] In this way we obtained an average figure indicating rhythm of practice, not based on any single day but rather based on activity over a continuing period (as a style of practice). By projecting these figures as weekly data, we obtained a regular consultation pattern for a physician's typical week.

FIGURE 1. Polypharmacy survey questions

In reducing risks of polypharmacy for patients over the age of 65, what is your level of agreement with the following items?

1 – Take more time to educate patients on medicinal interactions
Very strongly agree *Strongly agree* *Strongly disagree* *Very strongly disagree*

2 – Follow up patients more regularly
Very strongly agree *Strongly agree* *Strongly disagree* *Very strongly disagree*

3 – Organize prescribed drugs into a hierarchy
Very strongly agree *Strongly agree* *Strongly disagree* *Very strongly disagree*

4 – Give priority to non-drug treatment when it is possible
Very strongly agree *Strongly agree* *Strongly disagree* *Very strongly disagree*

5 – Check prescriptions made by other physicians to these patients
Very strongly agree *Strongly agree* *Strongly disagree* *Very strongly disagree*

The questionnaire also included the following specific case vignette:

> A known patient suffering for the first time from mild and temporary depression with no suicidal tendencies requests a consultation. What type of treatment do you provide? (several answers possible)

The doctor could choose from several possibilities: provide or prescribe psychotherapy, prescribe chemotherapy or prescribe phytotherapy (herbal medicine, such as St. John's wort in the case of depression). This vignette was constructed with the help of members of the Haute autorité de santé (HAS, the French national authority for health), because the final objective of the study was to examine the determinants of recourse to phytotherapy (recently reimbursed by the French social security system). We nevertheless felt that it was relatively more interesting to observe the "upstream" choices between resorting to drugs (including phytotherapy) and psychotherapy exclusively. We divided the doctors' answers into three categories: (1) doctors opting exclusively for the prescription of drugs, (2) doctors opting exclusively for non-drug treatment (psychotherapy) and (3) doctors suggesting a combination of drugs and non-drug options.

We intended to highlight the factors associated with these choices of treatment in the clinical case presented, a patient suffering from mild depression. We performed a multinomial logistical regression in which the dependent variable represented the three modalities – 1,2,3 – described above (multinomial methods allow taking into account the choice between the three options simultaneously). Two alternatives – "exclusive choice of drug treatment" and "choice of combining drug and non-drug treatment" – were compared to the reference "exclusive choice of non-drug treatment." Because the number of variables included in the model was not important (about 15), we performed a stepwise backward calculation with a 10% exit threshold, allowing us to add back variables if they later appeared to be significant. The analyses were performed using the SAS V9 software.

Results

Two hundred and twenty-five doctors (i.e., 12.28% of the sample) opted for the purely pharmaceutical solution, 410 (22.38%) chose to provide or prescribe psychotherapy without any drug and 1,197 (65.34%) preferred to combine psychotherapy and drugs. Of those opting for a purely pharmaceutical solution, 133 (59.11%) chose chemotherapy rather than herbal therapy. Table 1 presents the results of the multinomial analysis between option 1 (exclusively drugs) and option 2 (psychotherapy). The regression analysis between option 2 (psychotherapy) and option 3 (combination of a drug and psychotherapy) is presented in Table 2.

TABLE 1. Characteristics associated with the exclusive prescription of drug compared to the exclusive prescription of non-drug treatment*

Variable	Category	Simple logistic regression		Multiple logistic regression	
		OR [95% CI]	*P*	OR [95% CI]	*P*
Type of practice area	Urban Suburban Rural	1 1.18 [0.76–1.84] 1.63 [1.11–2.39]	 0.46 0.01	1 1.19 [0.74–1.90] 1.61 [1.06–2.44]	 0.48 0.02
Region	Loire Lower Normandy Burgundy Brittany PACA	1 2.80 [1.50–5.23] 1.72 [0.95–3.11] 2.50 [1.50–4.18] 1.97 [1.19–3.27]	 0.00 0.07 0.00 0.01	1 2.57 [1.35–4.88] 1.65 [0.90–3.03] 2.40 [1.42–4.06] 2.05 [1.20–0.50]	 0.00 0.11 0.00 0.01
Participation in CME	Yes No	1 2.33 [1.39–3.92]	 0.00	1 1.91 [1.11–3.29]	 0.02
Mean frequency of visits of drug representatives (weekly) (between 0 and 30)		1.14 [1.10–1.19]	0.00	1.13 [1.09–1.18]	0.00
Sensitivity to the risks linked to polypharmacy	Yes No	1 2.85 [1.45–5.62]	 0.00	1 2.66 [1.31–5.39]	 0.01
Rate of GPs who wish to reduce their work time		1.01 [1.00–1.02]	0.14	1.01 [1.00–1.02]	0.03
Average length of consultation	> 30 min < 30 min	1 2.27 [1.46–3.53]	 0.00	1 2.04 [1.29–3.22]	 0.00

* The other variables tested were: sex; age; marital status; sector of practice; work in group practice; response modality; participation in PPE; share of patients with universal health coverage; share of patients over 60; use of an active information source such as a guidelines, medical journals, pharmaceutical laboratory or HAS websites, practice of "soft" medicine and use of a computer to prepare prescriptions.

As seen in Table 1, the probability of prescribing drugs exclusively varied significantly according to the size of the town (p=0.02 for rural district) and region where the practice was located (p=0.01, but depending on regions), and was significantly higher among doctors not participating in CME (p=0.02), those with a high frequency of receiving medical representatives (p<.01), those less sensitive to the risks linked to polypharmacy among elderly people (p=0.01), those who wish to reduce their work time (p=0.03) and those who demonstrate short consultation length (p<.01).

Table 2 (the other face of the multinomial regression model) analyzed the choice between a mix of pharmaceutical and psychotherapeutic treatment vis-à-vis psychotherapy only. In the multiple regression model, the predictors of this choice are exclusively centred on drug issues: only high frequency of receiving pharmaceutical sale representatives and sensitivity to the risks of polypharmacy among elderly people remain significant (p<.01 and p=0.01, respectively). Consultation length was not significant in these cases.

TABLE 2. Characteristics associated with mixed prescription of drug and non-drug treatment compared to the exclusive prescription of non-drug treatment

Variable	Category	Simple logistic regression		Multiple logistic regression	
		OR [95% CI]	*P*	OR [95% CI]	*P*
Type of practice area	Urban Suburban Rural	1 0.87 [0.64–1.19] 0.94 [0.71–1.25]	 0.38 0.69	1 0.94 [0.69–1.29] 0.96 [0.72–1.29]	 0.71 0.40
Region	Loire Lower Normandy Burgundy Brittany PACA	1 1.07 [0.70–1.65] 0.81 [0.56–1.18] 0.84 [0.60–1.16] 1.18 [0.87–1.60]	 0.75 0.27 0.28 0.28	1 1.05 [0.68–1.63] 0.77 [0.52–1.12] 0.80 [0.57–1.12] 1.05 [0.76–1.45]	 0.82 0.17 0.19 0.75
Participation in CME	Yes No	1 1.67 [1.10–2.51]	 0.02	1 1.46 [0.96–2.23]	 0.08
Mean frequency of visits of drug representatives (weekly) (between 0 and 30)		1.10 [1.06–1.13]	0.00	1.09 [1.06–1.13]	0.00
Sensitivity to the risks linked to polypharmacy	Yes No	1 1.37 [0.77–2.43]	 0.00	1 1.29 [0.72–2.32]	 0.01
Rate of GPs who wish to reduce their work time		1.00 [0.99–1.01]	0.85	1.00 [0.99–1.01]	0.79
Average length of consultation	> 30 min < 30 min	1 1.18 [0.91–1.53]	 0.21	1 1.11 [0.85–1.45]	 0.45

Discussion

The independent variables selected by the stepwise calculation were expected: the independence in relation to the pharmaceutical industry (low number of pharmaceutical sales representatives) and the attitude to the risk of polypharmacy are predictors of a low rate of recourse to drug treatment. This finding tends to validate the approach adopted, in particular the quality and sincerity of the doctors' answers to the clinical case put to them.

The length of consultation influenced the choice of strategy adopted by the GPs. Doctors with a lower average length of consultation also favoured prescription of drugs; there is therefore a negative correlation between the length of consultation and prescription. GPs with a lower average length of consultation may attempt to shorten the patient's visit: writing a prescription can be seen as a means of bringing the consultation to a close and inviting the patient to leave (Thomas 1978). In the case of doctors providing psychological treatment themselves in the non-drug option, a substitution can be envisaged between the therapeutic listening performed by the doctor to treat

depression and recourse to a pharmacopoeia, enabling the doctor to save time in seeing the patient. (Indeed, among doctors who opt for an exclusively non-drug choice, 67.8% claim to provide psychotherapy themselves; furthermore, even in the case of psychotherapy provided by a colleague – a psychiatrist or psychologist – it is difficult to imagine that referral to a specialist is possible without an explanation of the reasons for the referral.) Another independent variable mirrors this result significantly: the more doctors wish to reduce their workload, the more they opt exclusively for drug prescription. In the second part of the regression – the comparison between a combination of drug and psychotherapy vis-à-vis exclusive psychotherapy – there is no significant relationship between the length of consultation and the choice of prescription (p=0.45) (Table 2). This finding confirms the "time-saving" interpretation (substitution effect). The pressure of a high rhythm of consultation has no effect on the choice of modalities in which the doctor must, in all cases, devote psychological listening time to the patient.

Another independent variable mirrors this result significantly: the more doctors wish to reduce their workload, the more they opt exclusively for drug prescription.

Our findings of a negative correlation between the length of consultation and prescription are similar to those presented in the studies by Wilson (1985) and Davidson et al. (1994). The first paper suggests that if doctors engaged in longer consultations, they might reduce the number of drugs prescribed as well as improve the quality of the treatment provided. In the second, the over-prescribers are shown to be doctors with a heavy workload. Our study differs from that of Wilson insofar as the activity data supplied by the French social security office enabled us to obtain more reliable results (which are not simply declarative) concerning the length of consultations.

The strength of our study lies in the construction of the questionnaire: as the situation is identical for all the doctors surveyed, the biases caused by patient heterogeneity are removed. Nevertheless, it remains to be seen whether the negative correlation between the length of consultation and prescriptions written can be generalized for all pathologies, or whether the correlation is seen only in cases of treatment in the field of mental health, where the choice between therapeutic listening time and drug treatment is most clear cut.

Finally, we had the opportunity to examine the doctors' choices from the point of view of quality of care. The clinical case presented, i.e., a mild and temporary depression, does not correspond to the indications for drug chemotherapy as first-line treatment (ANAES 2002). However, this was the approach most often adopted by physicians who chose the drug-only option (of the 225 GPs who opted for a purely

pharmaceutical solution, 133 chose chemotherapy). If we disregard the doctors who opted for herbal therapy, which is a practice more consistent with ANAES guidelines, the average length of consultation variable is still significant at p=0.01 (and becomes non-significant for herbal prescriptions). Therefore, if public authorities wish to improve medical practice and curb certain reimbursements resulting from excessive drug prescription, they should pay more attention to the work time of self-employed GPs. We are conscious that controlling the work time of GPs, as an input for healthcare quality, could be difficult (see, for example, Wilson and Childs 2006 for a Cochrane review on interventions to change consultation times in general practice). But policy considerations, such as better distribution of doctors across the territory (avoiding excessive workloads for doctors in underpopulated areas) or the adoption of payment schemes unrelated to the number of procedures, might affect the length of consultation: GPs less subject to time pressure would be more inclined to adopt different therapeutic strategies. Another policy option might aim to modify prescribing patterns directly, through education and drug-use documentation, to counterbalance probable biases in information provided by pharmaceutical sales representatives (Lexchin 1997).

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Conclusion

We were able to interview independent GPs in five regions of France concerning the prescription strategy they adopt in the (hypothetical) case of a depressive patient. Among the characteristics of GPs who exclusively prefer to prescribe a drug instead of psychotherapy, we note that the role of length of consultation is decisive: the shorter the average consultation, the more doctors are likely to prescribe pharmaceutical treatment, which in this case does not conform to recommended practice.

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NOTES

[1] But GPs who practised these types of medicine in a non-exclusive manner were included.

[2] Specifically: the variable *length of consultation* in minutes was calculated by dividing the duration of activity declared by the doctor through the telephone questionnaire (total time worked as an independent doctor minus the time devoted to administrative tasks, medical training, speaking with medical representatives, etc.) by the number of procedures during the given period (a month or a year; to ensure that we eliminated seasonality in the date of the interview, we selected a year as the reference period, even if at the end of the study we projected the results into weekly data). The calculation also takes into account a constant transport time for all house calls of 10–20 minutes, with the precise value depending on whether the GP was located in an urban or a rural area. Consultations undertaken outside the scope of reimbursed healthcare are not considered, e.g., telephone or free consultations (less than 1% of the activity).

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