Exploring the Effectiveness of a P4P Scheme from the Italian General Practitioners’ Perspective: A Replication Study

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Abstract
Background A major problem of the primary healthcare systems is represented by the deficiencies in performance quality. Financial incentives can be used in order to improve the quality of healthcare. According to this, since 1993 many countries have introduced pay for performance reimbursement schemes to encourage practitioner behaviour to align with the specific objectives of the decision maker and to incentivize the provision of targeted services. In this context the study of Krauth et al. (2016) was the first in Europe to determine whether general practitioners would participate in a pay for performance programme and under what conditions. Our research replicates the German survey, adjusting it to the Italian context. This article explores whether financial incentives can improve the quality of healthcare from the perspective of general practitioners. The purposes were as follows: to assess the attitudes of Italian general practitioners towards the current remuneration scheme; to determine if they would participate in a pay for performance programme; and to analyse how such views vary among the groups of respondents.

Methods Our tool for data collection was a questionnaire elaborated on the basis of a theoretical framework developed by Krauth et al. The questionnaires were distributed from September to December 2017.

Results Results confirm that for a successful implementation of a quality-based compensation scheme, it is crucial to gain the acceptance and support of healthcare providers.

Conclusions To ensure that healthcare providers can realistically achieve the programme’s targets, they should be involved in the implementation process. Our study offers useful information for developing an effectiveness remuneration scheme in Italy for general practice.

Background Effective primary care is widely accepted to be a prerequisite for an effective, efficient and equitable health system: it can lead to better population health [1]. The population ageing of industrialized countries and the consequent increase in the incidence of chronic pathologies has placed the role of primary medicine at the centre of the international debate, highlighting its key role and the main critical issues. Preventive health care can be viewed from strategic perspectives such as determinants
of health, objectives of prevention and reduction of health care costs [2]. Despite this, a major problem of the primary healthcare systems is represented by the deficiencies in performance quality [3]. Some studies identified a relationship between the remuneration systems and quality of care [4, 5, 6]: the compensation schemes are mainly rewarding the provision of quantities of healthcare instead of performance quality [7]. In this context, financial incentives can be used in order to improve the quality of healthcare.

Pay for performance (P4P) is a remuneration scheme which supports quality improvement [8]. It links a proportion of the remuneration of healthcare providers to the achieved result on quality indicators [4].

The standard assumption of the P4P remuneration scheme is that people will work hard if they are paid for doing so; consequently, more pay elicits more and better performance [9]. Since 1993, many countries have introduced P4P reimbursement schemes to encourage practitioner behaviour to align with the specific objectives of the decision maker [10] and to incentivize the provision of targeted services [11] particularly in the USA [12], Australia [13], New Zealand [14, 15] and Canada [16].

In Europe, the Quality and Outcomes Framework (QOF) was implemented throughout the UK primary care sector in 2004 and is one of the most important P4P initiatives, linking up to 25% of the income of general practitioners (GPs) to the performance in more than 100 clinical and organizational indicators [14, 17].

After its introduction, other countries worldwide, such as France [18, 19], Estonia [20] and Taiwan [21, 22] started a P4P quality system for GPs to reward excellent outcomes. Despite the efforts, the spread of these programmes in Europe is still limited.

The extent to which this approach is considered to be effective remains contested, with concerns voiced over the perverse and unintended consequences of structuring a health system around targets and process indicators [7, 8, 23, 24, 25, 26, 27].

The concerns can be attributed to some potential obstacles: important preconditions for the implementation of this programme need to be fulfilled, including active provider engagement and
support, a transparent information system for collecting performance data is necessary, and a design that is tailored to the specific setting of the implementation [3].

Despite these problems, previous studies showed, according to physicians' opinions, clinical quality to be measurable [28], and the P4P scheme to be feasible [7].

However, studies stress that, when designing structural elements of a P4P programme (quality indicators and goal-setting, bonus amount, recipients), GPs’ general attitudes and preferences towards P4P should be considered [7]; in particular, a crucial element for the successful implementation of a performance-based compensation scheme is to gain the acceptance of healthcare providers [21].

In this regard, the study of Krauth et al. [7] was the first in Europe to determine whether GPs would participate in a P4P programme and under what conditions.

Our research replicates the German survey, adjusting it to the Italian context.

The purposes were as follows: (1) to assess the attitudes of GPs towards the current remuneration scheme; (2) to determine if GPs would participate in a P4P programme; and (3) to analyse how such views vary among the groups of respondents.

Italy represents a relevant opportunity for the study of P4P views in general practice: it is a country with a dominantly capitation-based system in which the P4P remuneration scheme has not yet been introduced, despite the existence of isolated cases, where some regions have begun to measure the performance of the organizational units to which the general GPs belong. At present, GPs receive a sum of money per individual patient for a specific period of time. Patients are registered on a GP’s list (although changing GPs after a certain time period is often allowed). GPs tend to over-delegate to other forms of care, since this brings workload reductions. In addition to this basic payment system, an additional financing system is put in place to promote only some preventive services. In particular, a bonus can be gained for prescribing less or generic pharmaceuticals [29].

A complete payment scheme, which includes financial incentives based on multidimensional indicators designed to promote team-based care with the aim of achieving evidence-based quality targets, still does not exist.
Despite that P4P has not yet been introduced, a debate about the opportunity to incorporate mechanisms that link part of the physician's salary to achieve agreed upon goals into conventional agreements is underway [30]. To evaluate the quality of the treatment, some "performance indicators" have been proposed, particularly for chronic diseases [31]. The introduction of a quality-based remuneration system could ensure a fixed fee and at the same time rewards for high quality "care" with additional compensation.

This study offers useful information for developing an effectiveness remuneration scheme in Italy for a general practice. The paper is organized as follows: the second section describes the method and the third reports results of this survey. The last section provides the conclusions, limitations, and directions for future research.

Methods
The questionnaire
Our tool for data collection was a questionnaire elaborated on the basis of a theoretical framework developed by Krauth et al. [7]. A preliminary investigation was conducted on a sample of 50 GPs in South Italy (Calabria region) in order to evaluate the questionnaire and to test the applicability of the original form in Italy. After this, some sections of the original questionnaire were modified to adapt it to the Italian context, in accordance with the suggestions given by the Italian Federation of GPs (FIMMG - Federazione Italiana Medici di Medicina Generale). The questionnaire was composed of 31 items and addressed the followings three topics:

a. (A) Demographic and social information of GPs: 1) region and city, 2) sex and 3) age, 4) practice organization (single practice, association, shared practice, group practice, continuity of care, retired medical practitioner, and other), 5) holder of convention in general medical practice (yes or no), and 6) years of convention;

b. (B) Assessment of the current remuneration scheme in the primary physician sector: 1) degree of satisfaction, 2) evaluation of the remuneration scheme proprieties (fairness, understandability, proportionality, and incentives for high-quality healthcare); and

c. (C) Attitudes towards P4P: the questions addressed some characteristics of P4P programmes, subdivided into six topics: (1) measuring and incentivizing the quality of healthcare, (2) evaluation of the appropriateness of some care quality indicators, (3) potential effects of implementing P4P (compared to the current remuneration scheme), (4) approximate percentage of financial incentives required, (6) publication of target achievement, (7) potential changes following P4P implementation,
and finally, (8) overall potential for motivation.
Topics were presented predominantly as closed questions on a five-point Likert scale (1 = unsatisfied/contrary; 2 = little satisfied/little agree; 3 = partially satisfied/indifferent; 4 = satisfied/enough agree; 5 = very satisfied/agree).

Sample
The questionnaires were distributed by the FIMMG from September to December 2017. In 2017, the FIMMG had a total of 2,000 GPs associated (60.46% of Italian GPs). The questionnaire was distributed to a random sample of 2,000 GPs. Written consent was not necessary as project was based on anonymous data and no personal information on physicians was recorded. All the participants provided oral informed consent to participate in the study after having received a description of the aims (General Data Protection Regulation n. 2016/679).

GPs were asked to anonymously complete a questionnaire online, returning 587 completed questionnaires. The number of respondents (587 cases) justifies a maximum error on the estimated P4P participants’ share between 4.00% (600 cases) and 4.10% (572 cases), assuming a 95% confidence level for the reliability.

Statistical procedures
First, a descriptive analysis was conducted for all variables using the mean and its standard error for continuous variables and the proportion for categorical variables. Second, by using the Cronbach model, a reliability analysis was adopted to test the questionnaire. The t-test and ANOVA test were used to compare the means for two and three independent samples, respectively. Moreover, through the comparison of the means of the first 30th with last 30th percentile, the discriminating items were determined. Successively, bivariate analysis was conducted to determine the significant relationships between the attitudes for the P4P and the position of every respondent. Finally, multivariate logistic regressions were used to explain the probability to participate the P4Pprogrammthrough the questions correlated to it. In particular, the first two models, obtained by the forward stepwise method, employed as independent variables only the attitudes (model (I)) and only the GP’s characteristics with the socio parameters (model (II)) that were significant for both at the level < 0.10 in a previous bivariate analysis. Model (III) considered the attitudes and GPs’ characteristics with the
socio parameters suggested by model (I) and (II) that were significant at the level < 0.01 after using the forward stepwise method (with an entry of < 0.20 and an exclusion of > 0.10). Model (IV) used all variables through the block insert method, and model (V) deleted the variables of model (IV) that were not significant and correlated when the backward stepwise method (with an entry of < 0.20 and an exclusion of > 0.10) was applied. All statistical analyses were performed by using the Statistical Package for the Social Sciences (SPSS) software (v. 23.0, SPSS Inc. Chicago, IL, USA).

Results
Demographic and social information of GPs
Table 1 shows the descriptive analysis of the sample. It predominantly consisted of males (71.2%) of mature age (60.8). In contrast, females (28.2%) were younger than males by at least a decade (49.6). Residents from North Italy (54.7%) comprised half of the sample, and the other half was primarily from Middle Italy (26.6%) and South Italy (18.7%). The general practice types of the sample were ordered as: first, those who were members of a group unit (35.1%) and members of a network (25.8%) and second, those who were members of an association (16.5%) and a consulting room (12.4%) and, finally, small percentages of members comprised the other categories. The years of practice of a respondent were on average twenty-five (25.1) with the same amount above the average between males (28.8) and females (16.0).
Table 1 - Sample characteristics

**Questionnaire’s Reliability**

Table 2 presents the results of the reliability analysis on 25 of 31 items (topic A and topic B) of the questionnaire using both alpha and the split-half model. With the first method, the Cronbach’s alpha index was very high (0.839), and the descriptive scale analysis indicated a positive result (75.50 ± 14.37 over 125 equivalent to 6.04 ± 1.15 over a decimal scale) to accept the P4P procedure. Moreover, for all items investigated, the only exception of the last three concerned whether an introduction of this remuneration system brings an improvement of the current remuneration system that is based on the effort supplied in the provision of care. For the same reasons, there will be conflicting situations among colleagues, and Cronbach’s alpha index was only slightly different from the total value when the item was deleted, and a strong positive correlation existed among them (see the last and third last column in Table 3, respectively). The correlation between items was also on average high and positive (0.166) and presented a very small variability (0.071). With the split-half method, from the comparison of the correlations between the 30th percentile (group A) with the 70th percentile (group B) of the respondents’ total score, Cronbach’s alpha index was again high (0.792).

All ANOVA-tests were significant at the level < 0.001 with the usual exceptions of the same items
previously observed in the first method. Moreover, 6 of 25 items (24%) that included quality-based compensation is feasible, the quality of treatment should be rewarded, % of diabetic patients with known last year blood pressure, % of patients with known last year arterial pressure ≤ 140/90 mmHg, incentives for the quality of care, and the necessity of the introduction of a P4P remuneration scheme presented an effect size between 50% and 65% and a Cronbach alpha index that moderately decreased on the applicability of a P4P programme (see the second and last column of Table 3).

Table 2
Reliability Analysis

| Item                                                                 | ANOVA (F) | Eta-square | CorrectCorrelation item-total | Multiple - Correlation-square | Cronbach's Alpha(a) |
|----------------------------------------------------------------------|-----------|------------|-------------------------------|-------------------------------|---------------------|
| Assessment of the current remuneration scheme in the primary physician sector |           |            |                               |                               |                     |
| What is your degree of satisfaction                                   | 58.41***  | 0.132      | 0.310                         | 0.528                         | 0.835               |
| on amount of remuneration                                             | 6.07**    | 0.016      | 0.144                         | 0.520                         | 0.840               |
| The current remuneration system ...                                   | 4.24**    | 0.011      | 0.093                         | 0.533                         | 0.843               |
| is based on a good degree of fairness respect to other physicians’ categories | 26.49***  | 0.064      | 0.167                         | 0.540                         | 0.841               |
| is based on a comprehensible remuneration criteria                   | 2.51      | 0.006      | 0.094                         | 0.681                         | 0.843               |
| provides for appropriate incentives to supply a high-quality healthcare | 14.49***  | 0.036      | 0.191                         | 0.606                         | 0.840               |
| Regarding the introduction of incentives for high-quality healthcare, how do you assess the following statements? |           |            |                               |                               |                     |
| Healthcare quality is measurable                                      | 363.24*** | 0.485      | 0.580                         | 0.733                         | 0.824               |
| Quality-based compensation is feasible                               | 451.17*** | 0.540      | 0.618                         | 0.816                         | 0.823               |
| The quality of treatment should be rewarded                           | 434.57*** | 0.530      | 0.660                         | 0.647                         | 0.840               |
| To evaluate the quality of the treatment, how would you consider appropriate the following "performance indicators” proposed? |           |            |                               |                               |                     |
| an updated diabetic patients’ database of family doctors               | 320.77*** | 0.454      | 0.538                         | 0.481                         | 0.824               |
| % of diabetic patients with known last year blood pressure            | 396.43*** | 0.507      | 0.637                         | 0.753                         | 0.823               |
| % of patients with known last year arterial pressure ≤ 140/90 mmHg    | 402.03*** | 0.511      | 0.645                         | 0.794                         | 0.822               |
| % of diabetic patients with known last year HbA1c                    | 259.25*** | 0.402      | 0.573                         | 0.672                         | 0.827               |
| % of diabetic patients with known last year A1c ≤ 7.4%               | 366.23*** | 0.488      | 0.595                         | 0.654                         | 0.824               |
| Patient experience                                                    | 300.89*** | 0.439      | 0.542                         | 0.521                         | 0.823               |
| For the next contract renewals, how much do you agree whether a part of the doctor’s remuneration is bound to the achievement of specific quality objectives? |           |            |                               |                               |                     |
| It is useful to create homogeneity among behaviours                  | 169.46*** | 0.306      | 0.444                         | 0.589                         | 0.827               |
| It improves the general performance since the least performing doctors will be observed by the others | 227.29*** | 0.371      | 0.491                         | 0.609                         | 0.826               |
| For the same reasons, there will                                      | 0.284     | 0.001      | 0.024                         | 0.299                         | 0.827               |
be conflicting situations among colleagues
It is necessary to have a strong coordination to better manage the new dynamics

What changes would result from the introduction of the P4P scheme?

Understandability of the remuneration criteria
Incentives for high-quality healthcare
Control of doctors
Focusing on compensation-related indicators
Competition between GPs

Would P4P motivate you additionally?

(a) Cronbach’s Alpha when the item is deleted

* p ≤ .10
** p ≤ .05
*** p ≤ .01

Table 3
Bivariate analysis

| Parameter group | Participants | On-principle-participants | Non participants | Total | I vs II | I vs III |
|-----------------|-------------|---------------------------|-----------------|-------|--------|--------|
| Variable        | I           | II                        | III             | I + II + III | OR [95%-CI] | OR [95%-CI] | p       |
| n               | %           | n                         | %              | n        | %       | OR [95%-CI] | OR [95%-CI] | p       |
| Attitude para meters |           |                           |                 |         |        |         |         |        |
| What is your level of satisfaction |           |                           |                 |         |        |         |         |        |
| about the amount of remuneration Satisfied | 166 | 64.6 | 55 | 53.4 | 96 | 46.3 | 317 | 54.0 | 1.59* | [1.00-2.53] | 2.49** | [1.73-3.59] | <0.01 |
| not satisfied | 91 | 35.4 | 48 | 46.6 | 131 | 57.7 | 270 | 46.0 | Ref. | Ref. |        |        |        |
| about the criteria of remuneration Satisfied | 111 | 43.2 | 40 | 38.8 | 116 | 51.1 | 267 | 45.5 | 1.20 | [0.75-1.91] | 0.73* | [0.51-1.04] | <0.05 |
| not satisfied | 146 | 56.8 | 63 | 61.2 | 111 | 48.9 | 320 | 54.5 | Ref. | Ref. |        |        |        |
| The current remuneration system is... |           |                           |                 |         |        |         |         |        |
| is based on a good degree of fairness and respect to other physicians’ categories Agree | 131 | 51.0 | 45 | 43.7 | 117 | 51.5 | 293 | 49.9 | 1.34 | [0.85-2.12] | 0.98 | [0.68-1.40] | <0.01 |
| Disagree | 126 | 49.0 | 58 | 56.3 | 110 | 48.5 | 294 | 50.1 | Ref. | Ref. |        |        |        |
| is based on comprehensible remuneration criteria Agree | 111 | 43.2 | 46 | 44.7 | 114 | 50.2 | 271 | 46.2 | 0.94 | [0.60-1.49] | 0.75 | [0.53-1.08] | <0.05 |
| Disagree | 146 | 56.8 | 57 | 55.3 | 113 | 49.8 | 316 | 53.8 | Ref. | Ref. |        |        |        |
| is based on the efforts supplied in the provision of care Agree | 59 | 23.0 | 29 | 28.2 | 67 | 29.5 | 155 | 26.4 | 0.76 | [0.45-1.28] | 0.71* | [0.47-1.07] | <0.01 |
| Disagree | 198 | 77.0 | 74 | 71.8 | 160 | 70.5 | 432 | 73.6 | Ref. | Ref. |        |        |        |
| provides for appropriate incentives to supply high-quality healthcare Agree | 76 | 29.6 | 10 | 9.7 | 66 | 29.1 | 152 | 25.9 | 3.91* | [1.93-7.9] | 1.02 | [0.69-1.52] | <0.01 |
| Disagree | 181 | 70.4 | 93 | 90.3 | 161 | 70.9 | 435 | 74.1 | Ref. | Ref. |        |        |        |

On introducing mechanisms linking part of the doctor’s salary to the achievement of agreed objectives, how do you assess the following statements?
Healthcare quality is measurable

| Parameter group | Participants | On-principle-participants | Non participants | Total | I vs II | I vs III |
|-----------------|-------------|---------------------------|-----------------|-------|--------|--------|
| n               | %           | n                         | %              | n        | %       | OR [95%-CI] | OR [95%-CI] | p       |
| n               | %           | n                         | %              | n        | %       | OR [95%-CI] | OR [95%-CI] | p       |
| Healthcare quality is measurable Agree | 198 | 77.0 | 77 | 74.8 | 58 | 25.6 | 333 | 56.7 | 1.13 | [0.67-1.93] | 0.78** | [6.45-14.83] | <0.01 |
| Disagree | 59 | 23.0 | 26 | 25.2 | 169 | 74.4 | 254 | 43.3 | Ref. | Ref. |        |        |        |
What changes would result from the introduction of the P4P scheme?

| Quality-based compensation is feasible | Agree | 217 | 84.4 | 88 | 85.4 | 51 | 22.5 | 356 | 60.4 | 0.93 | [0.49–1.76] | 18.72 *** | 11.8 [3–29.63] |
| Disagree | 40 | 15.6 | 15 | 14.6 | 176 | 77.5 | 231 | 39.4 | Ref. | Ref. | Ref. | Ref. | Ref. |

| The quality of treatment should be rewarded | Agree | 248 | 96.5 | 100 | 97.1 | 150 | 66.1 | 501 | 85.3 | 0.83 | [0.22–3.12] | 14.15 *** | 6.89 [29.05] |
| Disagree | 9 | 3.5 | 3 | 2.9 | 70 | 33.9 | 86 | 14.7 | Ref. | Ref. | Ref. |

To evaluate the quality of the treatment, how would you consider appropriate the following "performance indicators" proposed?

| an updated diabetic patients’ database of family doctors | Agree | 185 | 72.0 | 82 | 79.6 | 109 | 48.0 | 376 | 64.1 | 0.66 | [0.38–1.14] | 2.78* | 1.91 [4.05] |
| Disagree | 72 | 28.0 | 21 | 20.4 | 118 | 52.0 | 211 | 35.9 | Ref. | Ref. | Ref. |

| % of diabetic patients with known last year blood pressure | Agree | 216 | 84.0 | 77 | 74.8 | 114 | 50.2 | 407 | 64.3 | 1.78* | [1.02–3.10] | 5.22* | 3.42–7.97 |
| Disagree | 41 | 16.0 | 26 | 25.2 | 113 | 49.8 | 180 | 30.7 | Ref. | Ref. |

| % of patients with known last year arterial pressure ≤ 140/90 mmHg | Agree | 219 | 85.2 | 87 | 84.5 | 107 | 47.1 | 413 | 70.4 | 1.06 | [0.56–2.00] | 6.46* | 4.20–9.96 |
| Disagree | 38 | 14.8 | 16 | 15.5 | 120 | 52.9 | 180 | 29.6 | Ref. | Ref. |

| % of diabetic patients with known last year HbA1c | Agree | 236 | 91.8 | 100 | 97.1 | 169 | 74.4 | 508 | 86.5 | 0.34 | [0.10–1.16] | 3.86* | 2.26–6.60 |
| Disagree | 21 | 8.2 | 3 | 2.9 | 58 | 25.6 | 79 | 13.5 | Ref. | Ref. |

| % of diabetic patients with known last year A1c ≤ 7.4% | Agree | 226 | 87.9 | 99 | 96.1 | 130 | 57.3 | 455 | 77.5 | 0.30* | [0.10–0.86] | 5.44* | 3.44–8.60 |
| Disagree | 31 | 12.1 | 4 | 3.9 | 97 | 42.7 | 132 | 22.5 | Ref. | Ref. |

| Patient experience | Agree | 191 | 74.3 | 89 | 86.4 | 81 | 35.7 | 361 | 61.5 | 0.46* | [0.24–0.85] | 5.22* | 3.53–7.70 |
| Disagree | 66 | 25.7 | 14 | 13.6 | 146 | 64.3 | 226 | 38.5 | Ref. | Ref. |

For the next contract renewals, how much do you agree whether a part of the doctor's remuneration is bound to the achievement of specific quality objectives?

| It is useful to create homogeneity among behaviours | Agree | 193 | 75.1 | 75 | 72.8 | 88 | 38.8 | 356 | 60.6 | 1.13* | [0.67–1.89] | 4.76* | 3.23–7.03 |
| Disagree | 64 | 24.9 | 28 | 27.2 | 139 | 61.2 | 231 | 39.4 | Ref. | Ref. |

| It improves the total performance since the least performing doctors will be observed by the others | Agree | 159 | 61.9 | 65 | 63.1 | 27 | 11.9 | 251 | 42.8 | 0.95 | [0.59–1.52] | 12.02 *** | 7.48 [19.31] |
| Disagree | 98 | 38.1 | 38 | 36.9 | 200 | 88.1 | 336 | 57.2 | Ref. | Ref. |

| Analogous reasons produce conflicting situations among colleagues | Agree | 218 | 84.8 | 95 | 92.2 | 181 | 79.7 | 494 | 84.2 | 0.47* | [0.21–1.05] | 1.42 | [0.89–2.27] |
| Disagree | 39 | 15.2 | 38 | 7.8 | 46 | 20.3 | 93 | 15.8 | Ref. | Ref. |

| It is necessary to have a strong coordination to better manage the new dynamics | Agree | 244 | 94.9 | 96 | 93.2 | 151 | 66.5 | 491 | 83.6 | 1.37 | [0.53–3.53] | 9.45* | 5.07–17.60 |
| Disagree | 13 | 5.1 | 7 | 6.8 | 76 | 33.5 | 96 | 16.4 | Ref. | Ref. |

What changes would result from the introduction of the P4P scheme?

| Understandability of the remuneration criteria | Increase | 203 | 79.0 | 89 | 86.4 | 79 | 34.8 | 371 | 63.2 | 0.59* | [0.31–1.12] | 7.04 *** | 4.69 [10.57] |
| No change or decrease | 54 | 21.0 | 14 | 13.6 | 148 | 65.2 | 216 | 36.8 | Ref. | Ref. |

| Incentives for high-quality healthcare | Increase | 227 | 88.3 | 98 | 95.1 | 83 | 36.6 | 408 | 69.5 | 0.39* | [0.15–1.02] | 13.13 *** | 8.23–20.94 |
| No change or decrease | 30 | 11.7 | 5 | 4.9 | 144 | 63.4 | 179 | 30.5 | Ref. | Ref. |
### Table 2 - Reliability Analysis

In the major measures, 9 of 25 items (36%), in contrast with the degree of satisfaction, included paying criteria, all items about the current remuneration system, for the same reasons there will be conflicting situations among colleagues, risk to focus entirely on financial incentives and to forget the patient-physician relation, competition between family doctors and control of doctors, which yielded results that were not discriminating (since they were under 7%).

**Attitudes towards the current remuneration scheme**

A direct item of the questionnaire established the position of the respondents in front of the P4P

| Control of doctors | Increase | 224 | 87.2 | 96 | 93.2 | 177 | 78.0 | 497 | 84.7 | 0.50* | [0.21–1.16] | 1.92* | [1.18–3.10] |
|-------------------|---------|-----|------|----|------|-----|------|-----|------|-----|---------|--------|---------|
| No change or decrease |       | 33  | 12.8 | 7  | 6.8  | 50   | 22.0 | 90  | 15.3 | Ref. | Ref.    |        |        |

| Focusing on compensation-related indicators | Increase | 211 | 82.1 | 93 | 90.3 | 212 | 93.4 | 516 | 87.9 | 0.75 | [0.46–1.24] | 0.39* | [0.15–0.87] |
|---------------------------------------------|---------|-----|------|----|------|-----|------|-----|------|-----|---------|--------|---------|
| No change or decrease |       | 46  | 17.9 | 10 | 9.7  | 15   | 6.6  | 71  | 12.1 | Ref. | Ref.    |        |        |

| Competition between GPs | Increase | 186 | 72.4 | 77 | 74.8 | 186 | 81.9 | 444 | 75.6 | 0.83 | [0.56–1.22] | 0.49* | [0.23–0.87] |
|-------------------------|---------|-----|------|----|------|-----|------|-----|------|-----|---------|--------|---------|
| No change or decrease |       | 46  | 27.6 | 26 | 25.2 | 41   | 18.1 | 143 | 24.4 | Ref. | Ref.    |        |        |

| Would P4P motivate you additionally? | Yes | 227 | 88.3 | 102 | 99.0 | 33  | 14.5 | 362 | 61.7 | 0.59* | [0.33–1.05] | 33.13*** | [15.8–69.38] |
|-------------------------------------|-----|-----|------|----|------|-----|------|-----|------|-----|---------|--------|---------|
| No | 30  | 11.7 | 1    | 1.0 | 194  | 85.5 | 225  | 38.3 | Ref. | Ref. |        |        |        |

| GPs' characteristics | Sex | Male | 200 | 77.8 | 64 | 62.1 | 154 | 67.8 | 418 | 71.2 | 2.33* | [1.51–2.57] | 2.51* | [1.38–4.56] |
|---------------------|-----|------|-----|------|----|------|-----|------|-----|------|-----|---------|--------|---------|
|                     | Female | 57  | 22.2 | 39 | 37.9 | 73  | 32.2 | 169 | 28.8 | Ref. | Ref.    |        |        |

| Practice | Equip | 202 | 82.1 | 79 | 79.8 | 174 | 77.7 | 455 | 81.4 | 1.20 | [0.77–1.89] | 1.01 | [0.51–2.00] |
|----------|-------|-----|------|----|------|-----|------|-----|------|-----|---------|--------|---------|
|          | Single | 44  | 17.9 | 20 | 20.2 | 40  | 22.3 | 104 | 18.6 | Ref. | Ref.    |        |        |

| Area | North | 162 | 63.0 | 55 | 53.4 | 104 | 45.8 | 321 | 54.7 | 1.55* | [1.08–2.21] | 1.55 | [0.91–2.63] |
|------|-------|-----|------|----|------|-----|------|-----|------|-----|---------|--------|---------|
|      | Middle | 46  | 17.9 | 25 | 24.3 | 85  | 37.4 | 156 | 26.6 | 0.72 | [0.47–1.11] | 0.39* | [0.22–0.87] |
|      | South | 49  | 19.1 | 23 | 70.3 | 38  | 16.8 | 110 | 18.7 | Ref. | Ref.    |        |        |

| Socio parameters | Mean | Mean | Mean | Mean | Mean | p-Value | p-Value |
|------------------|------|------|------|------|------|---------|---------|
| Age              | 56.4 | 103  | 58.0 | 227  | 58.7 | 587     | 57.6    | 0.781 | 0.257 |
| Years Agreements | 257  | 24.5 | 103  | 25.7 | 227  | 25.5    | 587     | 25.1  | 0.418 | 0.406 |

* p≤.10
** p≤.05
*** p≤.01
programme. In particular, as conducted in Krauth et al. [7], GPs was classified in three different groups: (I) ‘participants’ were the respondents reporting a minimum bonus they would claim to opt for the P4P programme; (II) ‘on-principle-participants’ were the respondents participating on principle but with uncertainty about the minimum bonus to claim; and (III) ‘non-participants’ were the respondents definitely not opting for the P4P programme. Participants were the most frequently numerous with slightly under half of the respondents (43.8%±4.0%), while on-principle-participants and non-participants amounted to slightly less than one (17.5%±4.0%) and two-fifths (38.7%±3.2%) of the respondents, respectively. Figure 1 shows how the respondents were divided with respect to the position versus P4P and those in favour of a suitable added bonus for only the participants.

Figure 1 - Type of respondent

Table 3 presents the relationships between the single categorical and continuous variables and the attitude to the P4P programme. The ‘Participants’ category was always assumed to be the reference group. There is a wide variation with regard to the satisfaction with the amount of GPs' remuneration. In detail, 54% of respondents were satisfied, but this satisfaction was more evident for participants (against 65% vs 53% of on-principle participants and 42% of non-participants). With regard to the remuneration criteria, most of the respondents were not satisfied (55% overall). In contrast to the reference to the characteristics of the current remuneration system, emerging views showed that this variable is not proportional compared to the efforts supplied in the provision of care (74% of respondents) and does not provide for appropriate incentives to the supply of high-quality healthcare (74% of respondents). Most of the respondents thought quality of healthcare to be measurable (77% of participants and 75% of on-principle-participants) and that it is possible to pay in accordance with the quality of care provided (again, 84% of participants and 85% of on-principle-participants).

Significantly more non-participants thought quality of healthcare was not measurable and quality-based compensation was not feasible (74% and 78%, respectively). Participants and on-principle-participants were more optimistic about the variable that the quality of treatment should be rewarded (again, 97% of participants and on-principle participants vs. 66% of non-participants). Over three-fifths of the respondents agreed to consider the use of a specific performance indicator, with extreme
positions for the participants (more than 72%) and a partial scepticism shown from non-participants (approximately 50%). Only on % of diabetic patients with known last year HbA1c were both groups in agreement with the relevant percentages (92% of the former vs 74% of the latter). Overall, respondents believe that the introduction of P4P will increase the overall performance of physicians and will contribute to the achievement of specific quality objectives. Most respondents did expect P4P to be easier to understand (63% overall, with 79% of participants, 86% of on-principle participants and only 35% of non-participants) than the current compensation scheme. Participants and on-principle-participants were more optimistic about P4P setting incentives for high-quality healthcare (88% of participants and 95% of on-principle participants vs 37% of non-participants). On the other hand, most of the respondents would expect an increase in control if P4P was implemented (85% overall). Moreover, most of the respondents expected an increase in unintended consequences (such as focusing on compensation-related indicators and competition between family doctors) if P4P was implemented (88% and 76% of all respondents, respectively). Finally, the attitudes towards P4P were reflected in the additional motivation for healthcare provision, where 89% of participants and an almost total consensus (99%) of on-principle participants would feel motivated by P4P compared to only 15% of non-participants.

Table 3 - Bivariate analysis

Table 4 shows a collection of multivariate logistic regressions, where the probability of participating in the P4P programme is explained by attitude parameters, GPs’ characteristics and socio parameters. As previously observed in the bivariate analysis with reference to the differences between participants and non-participants, the satisfaction on the amount of remuneration, % of diabetic patients with known last year blood pressure, and the necessity to be in favour of the introduction of a P4P remuneration scheme were again strongly significant at the level < 0.001 in model (I), as well as in sex in model (II). Moreover, at the above attitude parameters cited, the current remuneration system provides for appropriate incentives to supply a high-quality healthcare and middle were relevant variables since the difference between participants and on-principle-participants was also a significant predictive variable in model (I) and model (II), respectively. In contrast, age, although
relevant at level < 0.001 in model (II), was not highly correlated (p-value = 0.257 in Table 3) with respect to the differences between participants and non-participants. All predictive variables of model (I) and model (II) participated again in model (III) with the parameter B almost identical and p-value higher or equal to the previous models. The validation of model (III) was conducted through the introduction of all variables in model (IV) and then the selection of those that were significant and not correlated after using the backward stepwise method was performed. In fact, adding new predictive variables and those that were not highly correlated, such as an updated diabetic patients’ database of family doctors, competition between family doctors, and practice, did not determine a relevant increase of the Nagelkerke $R^2$ ($R^2 = 0.552$ in model (V) versus $R^2 = 0.511$ in model (III)).

Table 4
Multivariate analysis

| Independent variables | Model (I) | Model (II) | Model (III) | Model (IV) | Model (V) |
|-----------------------|-----------|------------|-------------|------------|-----------|
| B                     | S.E.      | Sign. B    | S.E.        | Sign. B    | S.E.      | Sign. B | S.E. | Sign. B | S.E. | Sign. B | S.E. | Sign. B | S.E. | Sign. |
| Attitude parameters   |           |            |             |            |           |          |      |       |       |       |       |       |       |      |       |
| What is your degree of satisfaction on amount of remuneration | 0.912 0.248 0.000 | 0.848 0.258 0.001 | 0.792 0.326 0.015 | 0.848 0.282 0.003 | 0.784 0.314 0.003 |
| on paying criteria    | -0.761 0.256 0.003 | -0.838 0.267 0.002 | -0.658 0.310 0.034 | -0.825 0.290 0.004 | -0.765 0.314 0.003 |
| The current remuneration system is based on a good degree of fairness and respect to other physicians’ categories | 0.025 0.314 0.937 |                     |                     |                     |                     |
| is based              |           |            |             |            |           |          |      |       |       |       |       |       |       |      |       |
| On comprehensible remuneration criteria | -1.06 | .311 | .001 | -1.07 | .330 | .001 | -1.12 | .466 | .016 | -1.09 | .385 | .004 |
|---------------------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| is based on the efforts supplied in the provision of care | 1.473 | .328 | .000 | 1.642 | .344 | .000 | 1.937 | .441 | .000 | 1.823 | .394 | .000 |

On introducing mechanisms linking part of the doctor's salary to the achievement of agreed objectives, how do you assess the following statements?

| Health care quality is measurable | .281 | .337 | .404 |
|----------------------------------|------|------|------|
| Quality-based compensation is feasible | 928  | .275 | .001 | .871 | .293 | .003 | .987 | .395 | .012 | 1.045 | .322 | .001 |
| The quality of treatment | .260 | .582 | .655 |
To evaluate the quality of the treatment, how would you consider appropriate the following "performance indicators" proposed?

| % of diabetic patients | % of patients with known last year blood pressure | % of patients with known last year arterial blood pressure | % of patients with known last year HbA1c |
|------------------------|-----------------------------------------------|--------------------------------------------------------|-------------------------------------|
| 1,224,456,007          | 1,205,313,000                                 | 1,098,336,001                                           | 1,175,497,000                      |
| 727,284,007            | 708,341,038                                    | 695,323,039                                             | 761,468,037                        |
| 1,369,547,001          | 1,324,373,000                                 | 1,324,373,000                                           | 1,324,373,000                      |
| 1,334,537,001          | 1,211,611,000                                 | 1,237,611,000                                           | 1,211,611,000                      |
| 950                    | 950                                            | 950                                                    | 950                                |
| 1,211,611,000          | 1,211,611,000                                 | 1,211,611,000                                           | 1,211,611,000                      |
| Patients with known last year A1c ≤ 7.4% | Patient experience | For the next contract renewals, how much do you agree whether a part of the doctor's remuneration is bound to the achievement of specific quality objectives? | It is useful to create homogeneity among behaviours | It improves the total performance since there exists a control between doctors | For the same reasons, there will be conflicting situations among |
|----------------------------------------|--------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| -0.625                                 | 0.279              | -0.635                                                               | -0.010                                                        | -1.342                                                           | -0.003                                                               | -0.777                                                               | -0.310                                                               | 0.012                                                               |
It is necessary to have a strong coordination to better manage the new dynamics...

| What changes would result from the introduction of the P4P scheme? |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Understandability of the remuneration criteria | 860 | 263 | 0.001 |
| Incentives for high-quality healthcare | | | 0.072 |
| Control of doctors | | | -0.337 |
| Focusing on compensation-related indicators | 1,194 | 350 | 0.001 |
| Competition between GPs | | | -1.081 |
| Would P4P motivate you additionally? | Yes | 1,998 | 284 | 0.000 |

|          |          |          |          |          |
|----------|----------|----------|----------|----------|
|          | 735      | 501      | 142      | 1,998    |
|          | 2,193    | 297      | 0.000    | 2,352    |
|          | 395      | 0.000    | 2,361    | 323      |
|          | 0.000    | 2,361    | 323      | 0.000    |
Table 4 - Multivariate analysis

Discussion

In this study, we first assessed the attitudes of Italian GPs towards the current remuneration scheme. Then, we analysed emerging views regarding the introduction of the P4P remuneration scheme. Finally, we examined how these views differed between respondents. Some interesting trends emerged.

Regarding the first objective, Italian GPs seem to be divided in their satisfaction towards the amount of their remuneration. In particular, 58% of respondents were satisfied, but this satisfaction was more evident for participants. Moreover, the current remuneration scheme does not seem to be proportional compared to the efforts supplied in the provision of care and does not seem to provide appropriate incentives to the supply of high-quality healthcare.

According to this, an overall dissatisfaction emerges regarding the remuneration criteria. Indeed, even those who were in favour of introducing a new remuneration system did not share the criteria of the current remuneration system. An interesting trend emerged from this finding: while it is crucial to gain acceptance by healthcare providers to ensure a successful implementation of a quality-based compensation scheme, on the other hand, the acceptance of this change by physicians will not be possible without calling into question the current remuneration criteria.

The second purpose of this study was to analyse emerging views regarding the introduction of the
P4P remuneration scheme in Italy for a general practice. Generally, a large percentage of respondents support the introduction of the P4P remuneration system. In contrast, non-participants believe that healthcare quality cannot be measured and cannot be paid for. Moreover, non-participants think that this new remuneration scheme does not help improve the state of health for their patients.

Other divergent views exist among the three respondent groups. As expected, for most of the respondents (participants and on-principle participants), the P4P programme is a useful instrument to match the quality of healthcare provided by physicians. In contrast, non-participants think that this new remuneration system cannot improve their performance.

Some common views emerged from our investigation: for the three categories of respondents, the P4P scheme could generate much tension and many conflict situations among physicians. In particular, many concerns are attributed to some potential obstacles: most of the GPs are expecting an increase in control and unintended consequences (such as focusing on compensation-related indicators and competition between family doctors) as a result of a P4P remuneration scheme implementation.

According to this, the introduction of coordination mechanisms is a key issue for all respondents. These findings could suggest some implications for policy makers. In particular, regarding the risk of focusing on compensation-related indicators, it could be useful to introduce a new performance compensation system in two phases: a first one as an evaluation step, in which specific key measures with regard to quality of care and improvement of patients’ health are identified. In addition, only after this step, measures would be adjusted to a second phase, according to which financial incentives are correlated.

The final aim of this study was to examine how GPs' views differed between respondents. The results showed that the differences in attitude were not explained by GPs’ characteristics. The fact that the differences in attitude were not explained by GPs’ characteristics suggests that cultural change might be an important starting point for introducing this new remuneration system.

Thus, our results encourage the development of a reflexive approach to cultural change, providing insights as to why it may be difficult to consider the legislation as the only driver of the change.
Conclusions

This study confirms that for a successful implementation of a quality-based compensation scheme, it is crucial to gain the acceptance and support of healthcare providers [7]; therefore, to ensure that healthcare providers can realistically achieve the programme’s targets, they should be involved in the implementation process. This would help to ensure higher levels of physician satisfaction and consequently increase the quality of care.

An interest in performance topics from the perspective of internal stakeholders is important to the achievement of healthcare objectives. This importance is particularly true with regard to primary care, which has an urgent need to manage complex dynamics and inefficiencies.

In this light, our findings have potential for practice and future research: managers need to focus more on dimensions connected to the effectiveness, efficiency and quality of care processes. This focus is particularly relevant in countries such as Italy, where for a long time, the financing system in primary care has not been connected to health goal attainment.

We acknowledge that this study has several limitations: the response rate was relatively low, inducing concerns about representativeness. Future research should focus on enlarging the sample of the case study and evaluating opportunities for comparison with other countries to assess other emerging critical questions. However, this study represents the first attempt to explore the effectiveness of a P4P scheme from GPs’ perspective in Italy and contributes to the ongoing debate on the introduction of this remuneration scheme.

Abbreviations
Pay for performance (P4P)
Quality and Outcomes Framework (QOF)
General Practitioners (GPs)
Federazione Italiana Medici di Medicina Generale (FIMMG)
Statistical Package for the Social Sciences (SPSS)

Declarations
**Ethics approval and consent to participate**

Research design and methods were approved by The Italian Federation of General Practitioners (FIMMG), Calabria region. Verbal consent to participate was provided by all participants prior to the beginning of the research. Written consent was not necessary as project was based on anonymous data and no personal information on physicians was recorded (General Data Protection Regulation n. 2016/679). All interviewees were informed regarding the purpose of the study, research details and expected outputs.

The article does not report the results of a health care intervention on human participants, therefore, the material used in the research did not need ethical approval in Italy.

**Consent for publication**

Not applicable

**Availability of data and materials**

The datasets during and/or analysed during the current study available from the corresponding author on reasonable request.

**Competing interests**

The authors declare that they have no competing interests.

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**Authors’ contributions**

MG - Writing-Original draft preparation, Data curation.

MM - Project administration, Conceptualization, Supervision.

FR - Methodology, Formal analysis.

All Authors read and approved the manuscript.

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Figures
Figure 1

Type of respondent