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## Original Article

# Performance indicators for clinical practice management in primary care in Portugal: Consensus from a Delphi study

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KEY MESSAGES:

- Performance indicators can track progress in medical care and improve outcome, but there is debate about their utility.
- The Delphi method is useful in collecting opinions about appropriate indicators.
- Portuguese experts agree that practice organization indicators are necessary but need to take into account constraints in human and financial resources.

ABSTRACT

**Background:** Performance indicators assessing the quality of medical care and linked to pay for performance may cause disagreement. Portuguese indicators included in recent health care reform are controversial.

**Objectives:** To obtain consensus from opinion leaders in family medicine regarding the performance indicators for practice management used in the evaluation of Family Health Units in Portugal.

**Methods:** Eighty-nine specialists in primary care were invited to answer the following question in an online Delphi study: 'Which performance indicators should be assessed regarding the organization and management of clinical practice in primary care in Portugal?'

A Likert scale was used to evaluate validity, reliability, feasibility and sensitivity to change. Twenty-seven experts participated in the second round and achieved a high degree of consensus. Eight categories were created for analysis.

**Results:** The experts suggested the use of existing indicators as well as new indicators. Thirty-nine indicators suggested by the experts are currently in use in Portugal. The assessment of the number of clinical acts performed, the number of administrative acts, and evaluation of the clinical demographic profile achieved a high degree of consensus. The expert panel suggested fifty new indicators. Five categories of these new indicators had a high degree of consensus, and three categories had a low degree of consensus.

**Conclusion:** The expert panel recommended that performance indicators of practice management should first assess the quantity of clinical and administrative activities undertaken. These indicators must take into account the human and financial resources available to the clinic and its demographic context.

**Keywords:** Performance indicators, primary healthcare, Portugal, Delphi method

## INTRODUCTION

Performance indicators are used in general practice to assess quality, but there is debate regarding their utility. Performance indicators introduced in Portugal have generated controversy because performance is not synonymous with quality though it may be a measurable proxy. Expert opinion on the qualities of indicators can help advance this process, and this is the focus of the current paper.

The Primary Health Care Mission (PHCM) was created to reform Portuguese primary health care (PHC), including the development of new structures in health care (1–3). Family Health Units (FHU) were created with teams of family physicians, nurses, and administrative

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staff, to provide continuous, accessible health care, with high technical and scientific quality, effectiveness, efficiency, productivity, and satisfaction of patients and professionals. Reform challenged the culture of health care in Portugal in its structure, processes, strategies and goals (2). Evaluation and monitoring, through self-evaluation and performance indicators, were necessary.

A performance indicator is an element of clinical practice with proven ability to assess the quality of care (4). Indicators should assess a defined aspect of care, discriminate between practices, be quantifiable and measurable (5). Indicators show if a certain level of performance is being achieved or if deficiencies require intervention. With new evidence, indicators require revision and adaptation for specific contexts (6). Indicators should focus on patient oriented evidence that matters. Initial efforts often focus on process rather than outcomes. This appears to be the situation in Portugal today. Later, the focus may shift to cost-effectiveness and gains in health. Updating of indicators is necessary to assess validity and prevent 'bottleneck effects' (7).

Measurement is meant to improve health outcomes by stimulating improvements in care. Recognition of deficiencies acts as a spur to improve outcomes (8). Performance indicators should be valid, reliable, sensitive to change, acceptable, feasible and relevant for correct use (8,9). With limited evidence in primary care, indicators have developed using expert opinion. Experts often disagree on the interpretation of evidence, so rigorous methods are needed to incorporate opinions (7). The Delphi technique is an accepted consensus method, using questionnaires with multiple iterations to collect data from experts (10).

The objectives of this study were to obtain expert opinion on existing performance indicators assessing the organization and management of clinical practice of family health units in Portugal and to assess consensus on the validity, reliability, feasibility and sensitivity to change of new indicators assessing organization and management of clinical practice in family health units.

## METHODS

The investigators met to define their objectives and choose a method. The Delphi method was selected because of its ease of application in a dispersed sample of experts through an electronic survey, preferable to the RAND method or nominal group process (6). The rules for the Delphi process were established, the panel of experts was selected, and pilot tests were planned.

### *Selection of experts for the Delphi survey and the pilot tests*

The investigators compiled a list of 89 experts in Family Medicine and primary health care in Portugal, including physicians and nurses working in primary health care with management experience in the Portuguese National Health Service.

Experts were chosen because of their clinical experience in general practice and family health, management experience in the Health Service, and academic experience (teachers in universities or specialty training programmes in family medicine). Participants were invited to join by an email from one of the principal investigators, who is known to them as a senior researcher in family medicine in Portugal.

Five investigators conducted pilot tests at each round of the study to evaluate the study method and instruments.

### *Conduct of the Delphi survey*

The study employed the Delphi method used in five earlier studies of performance indicators (5,10–13).

An electronic questionnaire was created using Google Forms. This facilitated responses, data entry, and analysis. Responses for the first round were collected from 42 participants between 15 September and 19 October 2011.

In the first round, participants answered the following open question: 'Which performance indicators should be assessed regarding the organisation and management of clinical practice in primary care in Portugal?' Responses were transformed into items to be assessed in the second round. The inclusion criteria for items selected from the first round were that they were complete, not repeated, and relevant to the study question, i.e. they reflected practice management and organization.

In the second round, participants were asked to rate each of the proposed performance indicators on the following four criteria: validity, reliability, feasibility and sensitivity to change. The participants were provided with the definitions of these terms shown in Table 1 used in the studies of Campbell and Derose (5,8). A 10-point scale was used, with 1 indicating minimum and 10 maximum agreement.

Table 1. Definitions of the assessment criteria for performance indicators used in Portuguese general practice presented to a Delphi panel of 89 experts (5,8).

| Criteria | Definition |
|---|---|
| Validity | The method proposed by the indicator assessed what the indicator purports to measure |
| Reliability | The measure of the indicator presents a minimal error and the indicator can be reproduced with the same characteristics and reliability according the different groups being assessed |
| Sensitivity to change | The indicator is able to detect changes occurring in the quality of the health care it purports to measure |
| Feasibility | It is possible to gather conditions or conditions have been gathered to apply the indicator efficiently |

In the second round, the mean and median scores of each criterion for each performance indicator were calculated. A cut-off score of 7.5 for the mean score of each of the four criteria was selected to indicate consensus or non-consensus for a given indicator, similar to the accepted cut-off value of seven (5).

The study was designed to end when consensus was reached on more than 70% of items, as in other studies, or after the fourth round, provided that the number of experts was equal to or higher than 10 (5). The second round was conducted between 9 January and 11 March 2012, with 29 participants.

## RESULTS

### *Process of the Delphi survey*

In the first round of the Delphi survey, 89 experts were invited to take part and 42 replied by answering the open question (Figure 1).

After eliminating responses that failed to meet the inclusion criteria, 89 study items were created for the second round (available from the authors on request). Participants indicated their level of agreement with the four criteria (validity, reliability, feasibility and sensitivity to change) for each of the indicators. Twenty-seven experts participated in the second round. In the second round, consensus was reached for over 70% of the indicators and the Delphi survey was concluded.

To aid in the analysis of the 89 indicators obtained in the second round, eight categories were created. The first was 'Assessment of the quantity of clinical and administrative acts performed.' This assessed the number, rate, or percentage of relevant clinical or professional acts (i.e. medical or nursing consultations) performed in facilities of the Portuguese National Health Service. The second category was 'Assessment of the quantity of clinical and administrative acts at home visits.' This included the number, rate, or percentage of relevant clinical or professional acts (i.e. medical or nursing consultations) performed in patients' homes. The third was 'Practice demographics.' This included demographic features of a given region (e.g. proportion

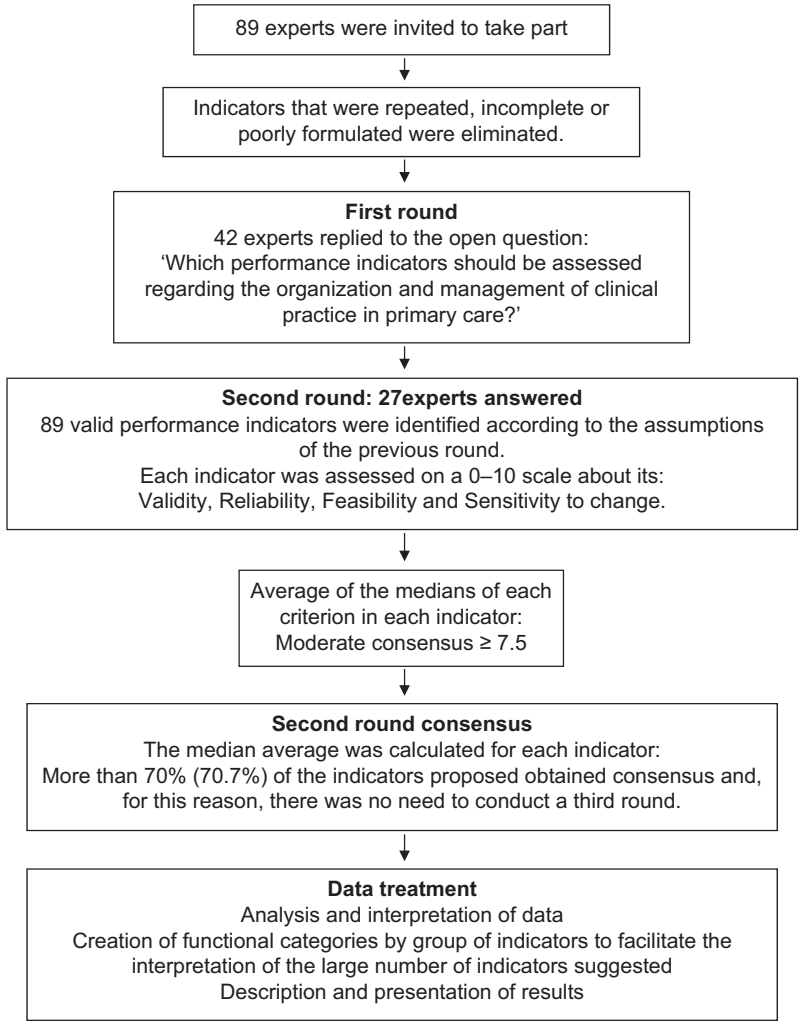


Figure 1. Conduct of the Delphi survey of performance indicators for practice management.

Table 2. Socio-demographic characteristics of the Portuguese experts taking part in the Delphi survey of performance indicators for primary care management.

| | Number | Percentage | Average |
|---|---|---|---|
| Age (years) | | | 50.5 (s.d.8) |
| Urban | 23 | 85.2% | |
| Rural | 4 | 14.8% | |
| Occupation | | | |
| Nurse | 3 | 11.1% | |
| Doctor | 24 | 89.9% | |
| Management position in health care | 16 | 59.2% | |

of elderly patients). The fourth was 'Availability of service.' This referred to the relationship between the number of patients and health care service resources (i.e. healthcare providers). The fifth was 'Assessment and control of professionals.' This included the accuracy of medical records. The sixth, seventh and eighth categories were 'Satisfaction of patients and professionals,' 'waiting times' and 'costs of services,' considered self-explanatory titles.

### *Description of study participants*

The characteristics of the 42 participants in the Delphi panel are given in Table 2. The average age was 51 years (standard deviation: eight years). Participants reside in Northern (66.7%), Central (14.8%), and Southern Portugal (18.5%). Most participants live in urban areas (85.2%).

By profession, 89.9% were doctors and 11.1% were nurses. Management positions in the National Health Service were held by 59.2%.

### *Analysis of existing and proposed indicators*

Table 3 describes proposed indicators that were identical to the existing indicators and new indicators proposed. The table shows the number of indicators achieving or not achieving consensus, the total number of indicators (and per cent) by category, the percentage of indicators approved by the total number of indicators in the category and weight of indicators of the category divided by the total number of indicators.

Among the indicators currently in use, the category that was most often recommended, the assessment of quantity of clinical and administrative acts, represented 61.5% of indicators. Two out of three indicators in this category reached the level of consensus (66.7%).

There was a high degree of consensus among members of the panel for the indicators currently in use. For example, among the indicators assessing practice demographics, the presence in the practice of an age-gender pyramid (calculating proportions of patients registered in the practice by age and gender) and the calculation of the proportion of elderly patients visiting the practice achieved a high rate of consensus. Among indicators assessing availability, the calculation of list size of registered patients for both doctors and nurses achieved a high degree of consensus. In the category of assessment of the quantity of clinical acts performed, the indicator with the highest degree of consensus was for the proportion of appointments booked that occurred.

### *Analysis of the categories of proposed new indicators*

Among new indicators that were proposed by the panel, the category 'Assessment of the quantity of clinical and administrative acts performed' was the category with the highest number of new indicators (40% of proposed new indicators). An example of a proposed indicator in this category, which achieved a high degree of consensus, was for a new indicator assessing the three-year rate of patient use of the clinic for medical consultations. Consensus was reached for over 79% of these indicators. New indicators in the category 'Assessment of the quantity of

Table 3. Categories of existing ($n$= 39) and new ($n$ = 50) performance indicators proposed by Delphi panel for Portuguese primary health care practice management.

| | Consensual indicators | Non-consensual | Total number | Per cent consensus |
|---|---|---|---|---|
| Type of existing indicator ($n$ = 39) | | | | |
| Quantity of clinical and administrative acts | 16 | 8 | 24 (62%) | 66.7% |
| Acts at home visits | 6 | 1 | 7 (18%) | 85.7% |
| Practice demographics | 6 | 0 | 6 (15%) | 100% |
| Availability of service | 2 | 0 | 2 (5%) | 100% |
| New indicators proposed ($n$ = 50) | | | | |
| Quantity of clinical and administrative acts | 19 | 5 | 24 (48%) | 79.2% |
| Acts at home visits | 2 | 10 | 12 (24%) | 16.6% |
| Practice demographics | 4 | 0 | 4 (8%) | 100% |
| Availability of service | 1 | 2 | 3 (6%) | 33.3% |
| Assessment and control of professionals | 2 | 0 | 2 (4%) | 100% |
| Satisfaction of patients and professionals | 2 | 0 | 2 (4%) | 100% |
| Waiting time | 2 | 0 | 2 (4%) | 100% |
| Costs | 0 | 1 | 1 (2%) | 0% |

Table 4. Average score (out of ten) for characteristics of performance indicators given to new and proposed indicators of primary care management by members of the Delphi panel.

| | *n* | Validity | Reliability | Sensitivity to change | Feasibility | Average |
|---|---|---|---|---|---|---|
| Existing indicators | 39 | 8.1 | 7.8 | 7.6 | 7.9 | 7.9 |
| Proposed indicators | 50 | 7.9 | 7.6 | 7.5 | 7.5 | 7.6 |
| Total | 89 | 8 | 7.7 | 7.6 | 7.7 | 7.7 |

clinical and administrative acts performed at home visits' also achieved a high degree of consensus.

The second largest group of proposed new indicators assessed waiting times. This accounted for 24% of the new indicators proposed. There was 16.6% consensus for the indicators in this category including 'the assessment of the mean waiting time for a medical consultation calculated from the listed time for the booked appointment.'

All new indicators proposed in the category 'Availability of service' achieved consensus, including 'the number of patients registered per medical secretary in the practice.'

Indicators in the category 'Assessment and control of professionals' and 'demographics' achieved consensus of 100%.

The categories 'Demographics' and 'Costs' each comprised less than 5% of proposed indicators. Indicators in the categories of 'Assessment and control of professionals' and 'demographics' achieved consensus of 100%. The only indicator proposed in the category 'Costs' failed to achieve consensus (0%).

### *Level of consensus according to assessment criterion*

Table 4 presents the level of consensus by assessment criteria, by status (indicators currently in use and proposed new indicators) and for all indicators. The highest levels of consensus were obtained for the 'Validity,' of both existing indicators (8.13%) and proposed new indicators (7.88%). The criterion of 'Sensitivity to Change' for existing indicators (7.64) and the criterion of 'Feasibility' for proposed performance indicators (7.48) obtained the lowest level of consensus. Existing performance indicators have a higher level of consensus compared to the proposed indicators.

## DISCUSSION

### *Main findings*

This study was designed to evaluate consensus among leaders in family medicine in Portugal regarding performance indicators for the organization and practice management in Family Health Units. Of the 89 indicators proposed, 63 achieved a high level of consensus.

Among the performance indicators proposed by these experts, 39 were identical to currently used indicators. Of those 39 existing indicators, 30 obtained moderate consensus. Of the 50 new indicators, 33 achieved consensus.

The highest consensus was obtained for indicators assessing the number of professional acts performed and for practice demographics. These results suggest that the assessment of clinical activity is important, but indicators must take into account available resources and characteristics of the population served.

### *External validity*

This study focussed on validity, reliability, sensitivity to change, and feasibility of indicators as well as acceptability to front-line professionals and leaders. Assessment of consensus among professional leaders is a step forward on the path of implementation of a set of performance indicators (7–9). Derose and Petitti considered that the level of objectives achieved by an institution is dependent on the environment in which it operates and the resources it has (8). Previous critiques of performance indicators in Portugal have emphasized the influence of an urban or rural location, the populous coastal area or isolated inland region, and the resources available (e.g. the number of doctors and nurses per user) (14,15).

The indicators with the lowest degree of consensus were 'Waiting Times', 'Control of professionals' and 'Costs'. None are represented among current indicators, and none of these indicators achieved consensus

'Assessment of the quantity of clinical and administrative acts' in the clinic and on home visits had the highest number of indicators proposed with the highest degree of consensus. This has been found in other studies (5).

The highest ranked assessment criterion was validity, for both indicators currently in use and proposed new indicators. The lowest ranked assessment criterion was feasibility for new indicators and sensitivity to change for existing indicators.

Indicators sensitive to change can motivate professionals to improve their performance and have a strong influence on public health services (16).

### *Strengths and limitations*

A limitation of this report is the difficulty in describing 89 indicators four assessment criteria. For ease of

reporting, analysis, and discussion, we used functional categories. Another possible limitation is the small proportion of nursing experts (11%) in our final panel. More nursing experts were invited, but they had a higher dropout rate than doctors during the Delphi process.

### *Implications*

Economic pressures from inside and outside the country threaten health care reform in Portugal. Reform was based on strengthening primary care as the cornerstone of the new health system. This required an investment in infrastructure, training, and surveillance of progress. A quality assurance framework, including the use of sensitive indicators of good practice management was part of the package. Widespread acceptance of performance indicators as a useful tool implies support for the aims of reform by health professionals. Many of the new indicators proposed by the opinion leaders consulted in this study measure improved access to primary care. Policy makers need to know that primary health care workers in Portugal believe in the importance of primary care as a solution to some of the economic challenges the country is facing.

### *Conclusion*

Despite the limitations in the current study, the findings suggest that there is good agreement among opinion leaders in family medicine and primary health care in Portugal that performance indicators can assess the process of care by quantifying professional activities. This process needs to take into account the financial and human resources available to family health units and the demographic context in which they operate. Future studies should focus on the sensitivity of indicators to detect change as this characteristic was deemed the weakest by the current panel of experts.

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