Themes and methods of research presented at European General Practice Research Network conferences

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Background. The World Organization of Family Doctors (Wonca) defined core characteristics of general practice and general practitioners’ competencies. It is unclear to which extent research has addressed these issues so far.

Objective. To determine themes and research methods of general practice research as reflected by presentations at the European General Practice Research Network (EGPRN) meetings.

Methods. Descriptive and retrospective study. All abstracts presented at each of the 14 EGPRN conferences between June 2001 and October 2007 were analysed for content and study design/methodology. Categories for content were developed inductively; a predefined hierarchical scheme was used for study designs.

Results. A total of $N = 614$ abstracts were classified. The main research topics were related to GP/health service issues ($n = 232$), clinical ($n = 148$) and patient-related themes ($n = 118$). Original data ($n = 558$) were mainly derived from cross-sectional designs (38.7%). Intervention studies (11.0%), longitudinal designs including case-control and cohort studies (13.3%) as well as instrumental research (2.2%) were less common. More than one-fourth of all original studies were qualitative studies (27.6%). Stratified analysis revealed that cross-sectional designs were less frequent in the second half of conferences. Analysis by country showed that, in contrast to different quantitative designs, the proportion of qualitative studies was comparable.

Conclusions. To test effectiveness of diagnostic and therapeutic interventions under primary care conditions, a higher proportion of experimental studies would be preferable. This could increase the acceptance of general practitioners’ specific approaches and provide clear guidance on approaches and procedures, especially in health care systems not predominantly based on primary care.

Keywords. Content, family practice, family medicine, methodology, study design.

Introduction

The importance of primary care in the promotion of worldwide health care is broadly recognized.\textsuperscript{1,2} General practice/family medicine (GP/FM) is the core discipline of primary health care in Europe. Based on older definitions and documents, its core characteristics were summarized in the European definition of GP/FM issued by the European branch of the World Organization of Family Doctors, Wonca Europe (http://www.woncaeurope.org/).\textsuperscript{3,4} This definition emphasized comprehensive, continuing care to every individual in the context of family, community and culture. However, it is not clear to which extent this core content was based on research evidence then or has specifically been addressed by research since.\textsuperscript{5} Ovhed \textit{et al.}\textsuperscript{6} reviewed publications of primary care research between 1975 and 2003 with the aim to discuss its future, but they did not look at themes or study designs in details. An older study from the UK revealed only a small number of interventional research and studies mainly focussing on organization and administration issues as well as social problems.\textsuperscript{7}

Recently, Wonca Europe’s research organization, the European General Practice Research Network (EGPRN), published a research agenda for general practice\textsuperscript{8–10} indicating current evidence gaps\textsuperscript{11} and
research needs in terms of content, methodology and policy. EGPRN organizes conferences twice a year where research can be presented either as full oral theme or as free-standing papers, short oral ‘one-slide-five-minute’ or poster presentations. Ongoing studies as well as project ideas are both eligible for presentation if they meet the requirements for peer review. Peer review has become increasingly structured during the years and focuses both on clarity and relevance of the research question as well as on methodological quality. Usually, about a half to two-thirds of submitted papers are accepted for presentation (EGPRN Executive Board, personal information) and published in the European Journal of General Practice.

The present study was performed as a part of the project on developing a Wonca/EGPRN research agenda and aimed to further define the current state of GP research. It analysed the research themes covered within recent EGPRN conferences with a focus on study design and methods that were used.

Methods

Selection and analysis of abstracts

All abstracts presented at the 14 EGPRN meetings between June 2001 and October 2007 were retrieved from the EGPRN abstract books or the European Journal of General Practice. They were classified on the basis of content and methodology. Analysis was stratified by country of origin, changes over time (first and second half of conferences) as well as theme and free-standing papers.

Content analysis

All abstracts were analysed by content analysis. Keywords describing the content of each abstract were developed and discussed by the authors (ML and EHP) in order to reduce their number in a stepwise process. One single keyword was finally agreed upon which described the study theme of each abstract most precisely. Studies addressing more than one theme were coded according to the theme representing the major part of the study. This approach was chosen to keep the analysis focussed and to avoid inflating the prevalence of themes. Choosing one main theme seemed less arbitrary than deciding on a cut-off on when to include or exclude a theme and proved quite feasible as short and usually well-focussed abstracts (not full study protocols) were analysed. Keywords were further grouped into main categories. These had not been predefined but were developed in an inductive process, each containing subcategories in order to deliver a more detailed picture of the themes.

Analysis with regard to methodology

Abstracts were categorized in terms of study design using a stepwise approach according to the following hierarchical fourth-level classification:

- First level: abstracts were classified as ‘Report’, ‘Original study’, ‘Systematic review/Meta-analysis’ or ‘Other’. Reports did not present results from original data but, for example the development of a guideline. The ‘Other’ category contained abstracts that were lacking information on the exact study design.
- Second level: original studies were further classified into ‘Qualitative’, ‘Quantitative’, both ‘Qualitative and quantitative’ or ‘Instrumental research’. The latter group contained studies about validation and reliability testing of instruments such as questionnaires.
- Third level: quantitative studies were further subdivided in accordance with the traditional hierarchy of evidence. This resulted in the 2 third-level subcategories ‘Intervention study’ and ‘Observational study’.
- Fourth level: intervention studies were grouped into either ‘with randomization’ or ‘without randomization’. Observational studies were further subdivided into cross-sectional surveys, case-control studies, cohort studies (both prospective and retrospective), ‘longitudinal’ (prospective data collection without control group) and ‘other’ studies. ‘Other’ studies contained, for example case reports. In other words, ‘longitudinal’ studies did not refer to ‘prospective’ cohort studies. They were chosen as additional category as—in contrast to classic ‘prospective’ cohort studies—many prospective studies do not include control groups.

Statistical analysis

All data were analysed using SPSS statistical software (version 16.0). Data were analysed descriptively by counting frequencies. Cross tabulations were used in order to demonstrate how content was linked with methodological categories. We used the chi-square test in order to explore differences of proportions, if appropriate. A $P$-value <0.05 was considered significant.

Results

Overview of the abstracts analysed

In total, $N = 614$ abstracts had been accepted and presented at one of the 14 EGPRN conferences; the themes of these conferences are presented in Table 1. A total of $n = 430/614$ abstracts (70.0%) described studies that had been finished at the time of submission. The remaining were either study proposals ($n = 97/614$) or studies in progress ($n = 87/614$). A total of $n = 338/614$ were theme ($n = 182/614$) or free-standing ($n = 156/614$) full oral presentations, whereas $n = 2/614$ were discussions, $n = 66/614$ were ‘one-slide-five-minute’ presentations and $n = 208/614$ abstracts were presented as posters.
Content analysis revealed seven main categories (Fig. 1). Each category was divided into subcategories, and for some of them, examples are given in the following section.

1. Guidelines: all abstracts regarding the development, implementation (see example) and adherence to guidelines.

Example: Abstract nr. 19 (May 2006) describes a qualitative study on the barriers and facilitators for the implementation of low back pain guidelines. This was classified as Guidelines/Implementation.

2. Clinical: clinical- or disease-related research with a focus on patient-related outcomes, e.g. the effect of medication. As examples, subgroups included the treatment of diseases (subgroup ‘Therapy’; see example), diagnostic tests as well as algorithms leading to a diagnosis (Diagnosis), prevention in general and clinical aspects of prevention in specific diseases such as cardiovascular disease (Prevention), risk factors as a key point or starting point for intervention (Risk factors), the symptoms or other clinical presentations of diseases (Disease) and the prognosis of specific diseases within patient groups (Prognosis).

Example: Abstract nr. 1 (May 2005) describes a case control study comparing the risk of myocardial infarction in patients taking Cox 2 antagonists and other NSAID. This was classified as Clinical/Therapy.

3. Epidemiology: abstracts reporting the incidence or prevalence of diseases or symptoms were assigned to this category.

Example: Abstract nr. 6 (October 2005) is a descriptive study regarding the knowledge and behaviour of Turkish High school students towards skin cancer. This was classified as Patient/Attitudes.

4. GP/Health service (HS): studies about health care professionals and health care with subcategories indicating, for example, practice and work organization, implementation of new technologies and staff issues (Organization; see example), quality of care including continuity, quality improvement and involvement of specialized care (Quality of care), general practitioners’ views on health-related topics (Attitudes and opinion), the ‘functioning’ of general practitioners (Performance), their consultation style and decision making (Doctor–patient relationship), the consumption of health care including differences between certain patient populations in health care utilization (Health care utilization) and the access to primary care (Health care access).

Example: Abstract nr. 39 (October 2005) describes a study on the level of organisational development in family practice. This was classified as GP/HS/Organisation.

5. Patient: this category comprised studies about characteristics or perspectives of patients. Main categories included patients’ attitudes regarding illness/disorders and patients’ satisfaction (Attitudes; see example), how consultations are influenced by the intraindividual background (Socio-demographic characteristics), how to promote compliance and causes of non-compliance (Compliance), the active participation of patients, shared decision making and influences on successful therapy (Participation) and the role and influence of the general practitioner (Education).

Example: Abstract nr. 9 (October 2004) describes a retrospective study of electronic patient records regarding surveillance of antibiotic prescriptions for respiratory tract infections. This was classified as Research/Electronic patient record.

6. Research: a meta-category regrouping studies on how research is performed, i.e. by using electronic patient records or difficulties with performance or funding. This category was also used if the abstract concentrated on certain methods, e.g. secondary data analysis, rather than on content. In this context, the subcategory ‘Primary care’ indicated studies in which the primary care setting was of special interest, e.g. when the difficulties in executing primary care research were focussed.

Example: Abstract nr. 1 (May 2005) describes a case control study comparing the risk of myocardial infarction in patients taking Cox 2 antagonists and other NSAID. This was classified as Clinical/Therapy.

7. Remaining: this category regroups studies, which were difficult to classify or dealt with unusual themes unrelated to the other categories.
Results of classification according to content
The results of the classification by main categories are shown in Figure 1. The largest group was ‘GP/HS’ (n = 232 abstracts), followed by the categories ‘Clinical’ (n = 148) and ‘Patient’ (n = 118). For each of these three largest categories, the subcategory with the highest number of studies is displayed in Figure 2. These were the subcategories ‘GP/HS/Organization’ (n = 43 studies), ‘Clinical/Therapy’ (n = 67) and ‘Patient/Attitudes’ (n = 57).

Results of classification according to methodology
Of all studies presenting original data (Original study, n = 558, 90.9%), the highest number was quantitative (64.0% of original studies) (Fig. 3). Qualitative studies represented a substantial group of all abstracts analysed for methodology (27.6%). Both qualitative and quantitative results were presented in 6.3% of the original studies, and only 2.2% were instrumental research.

Of all quantitative studies, the largest group was represented by cross-sectional surveys (60.5%). They were much more frequent than longitudinal studies (12.6%) defined as prospective data collection without control group. Classical cohort studies (5.0%) as well as case–control studies (3.1%) were even less common. Intervention studies were identified in 17.1% of the quantitative studies (approximately one-fourth of them having been randomized).

Cross tabulation of content and methodology
Cross tabulation (Table 2) of content and methodology revealed that for each content category, multiple approaches had been chosen. For clinical as well as epidemiological issues, cross-sectional designs were...
most frequently favoured (38.5% and 67.5%). In the GP/HS and in the Patient group, qualitative designs were the most frequent (37.5% and 38.1%), reflecting that in these content categories, more often attitudes of doctors or patients were addressed. Altogether, cross tabulations confirmed that highly ranked studies such as randomized controlled trials or longitudinal approaches were not among the most frequently chosen designs independent of the content addressed by each study.

Analysis over time and stratification by theme and free-standing topics
Comparison revealed that different content was similarly distributed in the first and second half of the conferences (Table 3; \( P = 0.21 \)). However, there was
a shift of methodology used, i.e. cross-sectional studies were much less frequent, whereas other observational studies, randomized controlled trials (RCTs) and qualitative studies were more prevalent ($P < 0.05$).

Comparing theme and free-standing papers (Table 4) revealed only slight differences in either content ($P = 0.38$) or methodology ($P = 0.40$), representing
the fact that the broad spectrum of GP was addressed over the years and that theme as well as free-standing papers covered our content categories in a balanced manner.

**Analysis stratified by country of origin**
The frequency of presenting countries is shown in Table 5. Linking the countries of origin with content and methodology revealed great regional differences, e.g. RCTs and cross-sectional designs were much more unequally distributed than qualitative designs, which reached relatively high percentages in all investigated countries. In Table 5, due to space reasons, for both content and methodology, only three exemplary categories are displayed.

**Discussion**

**Main findings**
This EGPRN study revealed a broad range of research themes that had been addressed. Clinical- or disease-related research, focussing on therapy, was found to be among the most frequent topics. Another frequent theme category addressed the attitudes of patients and doctors. Patients’ and doctors’ perspectives were often addressed appropriately by means of qualitative designs which were more frequent in the second half of the time period investigated and similarly distributed in terms of the country of origin. The majority of other studies, including those on clinical themes, comprised cross-sectional surveys. However, in the second half, methodology changed in a way that other observational designs (case–control studies and cohort studies) and interventional designs such as RCTs became more frequent; these different study types were unequally distributed in terms of the country of origin.

**Comparison with the current literature**
Recently, research gaps in primary health care were reported indicating five main topics regarded as important: basic knowledge, problem-solving approach, practice implementation, policy context and education. These were only partly covered by the abstracts analysed for the present study, and comparable (sub)categoricals such as guideline implementation were among the less frequent themes. Another classification by themes and methods was presented at the Wonca conference in Paris in 2007, yielding similar results compared to ours: general practitioners tended to perform descriptive research about organizational aspects including quality of care rather than interventional or longitudinal study designs. A recent study analysing fully published articles did not look at themes or study designs in detail, but another study on published articles revealed a similar overall picture. These results were also confirmed by the more extensive reviews of published literature in the research agenda.

The frequency of quantitative questionnaire-based studies was remarkable in the present study. However, the validity of questionnaire research is known to be limited, and many studies indicated what patients or doctors thought rather than reflected what really happened. Other designs such as intervention studies or prospective cohort studies measuring more ‘solid’ end points would be more appropriate for clinical research and many aspects of HS research, but they would be much more cost-intensive and more difficult to

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### Table 5 Countries of origin of 614 abstracts between June 2001 and September 2007 ordered by frequency

<table>
<thead>
<tr>
<th>Country</th>
<th>Abstracts, n (%)</th>
<th>Content, n (%)</th>
<th>Methodology, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clinical</td>
<td>GP/Health Service</td>
<td>Patient</td>
</tr>
<tr>
<td>Germany</td>
<td>80 (13)</td>
<td>21 (26)</td>
<td>28 (35)</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>70 (11)</td>
<td>25 (36)</td>
<td>26 (37)</td>
</tr>
<tr>
<td>Turkey</td>
<td>70 (11)</td>
<td>12 (17)</td>
<td>26 (37)</td>
</tr>
<tr>
<td>UK</td>
<td>54 (9)</td>
<td>7 (13)</td>
<td>29 (54)</td>
</tr>
<tr>
<td>France</td>
<td>52 (9)</td>
<td>8 (15)</td>
<td>24 (46)</td>
</tr>
<tr>
<td>Belgium</td>
<td>47 (8)</td>
<td>4 (9)</td>
<td>24 (51)</td>
</tr>
<tr>
<td>Italy</td>
<td>35 (6)</td>
<td>15 (43)</td>
<td>8 (23)</td>
</tr>
<tr>
<td>Greece</td>
<td>27 (4)</td>
<td>7 (26)</td>
<td>7 (26)</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>21 (3)</td>
<td>6 (29)</td>
<td>8 (38)</td>
</tr>
<tr>
<td>Israel</td>
<td>16 (3)</td>
<td>6 (38)</td>
<td>2 (13)</td>
</tr>
<tr>
<td>Slovenia</td>
<td>16 (3)</td>
<td>2 (13)</td>
<td>7 (44)</td>
</tr>
<tr>
<td>Spain</td>
<td>16 (3)</td>
<td>6 (38)</td>
<td>7 (44)</td>
</tr>
<tr>
<td>Sum (including*)</td>
<td>614 (100)</td>
<td>148 (24)</td>
<td>232 (38)</td>
</tr>
</tbody>
</table>

For both content and methodology, due to space reasons, three important categories were chosen as examples, i.e. the sum within content and methodology for each country is not 100%.

*Denmark (n = 13 abstracts), Malta (13), Ireland (12), Croatia (10), Poland (9), Finland (6), Hungary (6), Lithuania (6), Romania (5), Switzerland (5), Norway (4), Portugal (4), Sweden (4), Estonia (3), Austria (2), Bosnia/Herzegovina (2), Serbia (2), Canada (1), Latvia (1), USA (1) and Serbia/Montenegro (1).
conducted in primary care settings. Nevertheless, a high-level evidence for diagnosis and therapy in primary care has recently been demanded. As continuity of care is considered one of the primary care key features with patients seen over long periods of time, primary care seems to be an ideal setting for longitudinal data collection and studies on the development of health and illness and effects of care over time. Although more challenging than cross-sectional data collection and requiring continuous funding over longer periods as well as adequate methodological training, it could be of great benefit for primary care improvement. In depth qualitative research or sophisticated mixed method approaches are needed to study other important aspects of GP/FM, i.e. culture and illness or community orientation.

Limitations and strengths
A possible selection bias in this study may be caused by the fact that it was restricted to EGPRN meeting abstracts only. We cannot be certain whether our findings reflect the prevailing methodology only in certain European countries that are widely represented in the EGPRN meetings and where experimental research is rare. Wonca conference abstracts are not published in a journal or kept on continuously available Websites, and they are therefore lost to a scientific public. Retrieving and analysing abstracts of national conferences (Society of Academic Primary Care in the UK and North American Primary Care Research Group for North America) were beyond the scope of this study, though a comparison of the pattern of content and methodologies would be interesting. Moreover, other more local conference abstracts are mostly published in local journals and language resulting in a large body of ‘grey’ literature. It is also known that part of GP-related research is presented at specialists’ meetings. Using fully published articles would have been an alternative, but it is known that many abstracts for several reasons never result in journal publications. Altogether, EGPRN represents a large research organization with members of <30 European countries. With its regular meetings twice a year, it reflects an important and comprehensive part of European GP research.

Due to the fact that EGPRN accepts ‘work in progress’ if sufficiently relevant and well described to succeed in peer review, it is possible that some studies were presented more than once (i.e. initially as work in progress and later the results). As our unit of analysis was the abstract (not the study), this may result in some over-representation of themes or methodologies. However, as there is not always a clear-cut difference between arms or stages of one study and successive studies, it was not possible to make a valid distinction based on abstracts. Nevertheless, our view may sufficiently well represent what researchers work on and thus reflect the ‘prevalence’ rather than ‘incidence’ of research themes and methods. Some bias may have occurred as we only considered accepted abstracts, not submitted ones, and topics related to conference themes (i.e. some disease-related themes or electronic patient records, see Table 1) may have been favoured and occur more often. Therefore, research not in line with a conference theme or generally considered less relevant as well as less elaborated methodologies may be underrepresented. However, while EGPRN assigns conference themes, abstracts are selected on relevance and quality. Theme abstracts are not treated preferentially, and our analysis showed a high number of free-standing papers, the content of which was comparable to theme papers. While it is possible that topics (or methods) not accepted in peer review are under-represented, this holds true for any form of publication or reviews of the literature; the procedure of peer review is generally trusted to select noteworthy and relevant research. Our study thus reflects what has been chosen to be noteworthy rather than all that has ever been done.

Conclusions
In order to test the effectiveness of diagnostic and therapeutic interventions under prevailing primary care conditions, a specific set of methods seem appropriate including qualitative approaches, longitudinal studies and intervention studies, and methods should probably be ‘mixed’. Therefore, it can be concluded from the results of the present EGPRN study that researchers in primary care should be encouraged to increase the proportion of longitudinal or experimental designs, that still seemed under-represented, while maintaining or increasing sophisticated qualitative methods. Moreover, besides the description of common care and health care organizations, research regarding GP/primary care as a complex issue should be considered more often, comprising the Wonca core competencies as well as the outcomes of care. This could probably increase the acceptance of general practitioner-specific approaches and provide clear guidance on procedures, especially in health care systems not predominately based on primary care.

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References


Fletcher RH, Fletcher SW, Wagner EH. *Clinical Epidemiology.* Baltimore, MD: Lippincott & Wilkins, 1996.


Pierson DJ. The top 10 reasons why manuscripts are not accepted for publication. *Respir Care* 2004; 49: 1246–52.