Research Square

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# Provision of European undergraduate primary care education and placements: A cross-sectional questionnaire study

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## Abstract

# Background

The quality and quantity of Undergraduate Primary Care (PC) Teaching (UGPCT) is related to recruitment. There is an international shortage of PC clinicians sufficient to cause EU concerns about public health, preparedness and resilience of essential health systems, and economic stability. There is no European data concerning quality, quantity or necessary resources to guide policy and decision-making in UGPCT.

# Methods

Cross-sectional survey of medical schools in 32 European countries. We collected quantitative and qualitative data on UGPCT. A validated tool was used, which after piloting and cultural adaptation was distributed to 201 medical schools by UGPCT committee of EURACT. Responses from 32 countries yielded a response rate 43%. Descriptive analyses were done with SPSS 29. Free text was analysed by thematic analysis.

# Results

Primary care is taught in university settings in 95.1% of European medical schools, although many schools appear uncertain as to what PC teaching is. PC comprises an average of 8.5% of clinical teaching. Some medical schools have no clinical UGPCT. Statistically significant variations in many aspects of teaching provision were found between regions of Europe. Evidence of discrimination towards PC academic and clinical teachers was found, enacted by restrictive and asymmetric policies regarding career progression, pay and training opportunities.

# Conclusion

Pan-European actions are needed to address a public health concern. Recognition of PC as a specialty in all European countries would be one step. Teachers and medical schools may need to examine attitudes enacted through policies in order to improve UGPCT and so address important public health concerns.

## Introduction

Strengthening Primary care (PC) is the cornerstone of WHO development goals aimed at improving global health [1, 2]. Evidence shows that countries with well-established PC have better healthcare outcomes (lower mortality, lower costs and better satisfaction) than countries that do not [3] or who have overdeveloped secondary care [4]. Despite this, there remains a critical global shortage of PC doctors [5]. A recent EU report identified the shortage of PC health workers as a major public healthcare concern in almost every country regarding provision of basic services and pandemic resilience [6]. It is established

that the amount of clinical exposure to PC at medical school is directly related to recruitment of PC physicians [7, 8], and therefore provision of PC education in medical school is a key factor in workforce planning.

There are several terms in use regarding the provision of medical care in community settings such as *general practice or family medicine* but there is considerable variation in how these terms are understood: here, we use the term primary care (PC) to cover medical care delivered in community settings. Undergraduate primary care teaching (UGPCT) takes place in medical schools for medical students and can take the form of lectures/small group work at the medical school, or placements/preceptorships in PC locations. In this study, we consider both contexts.

## Curriculum provision

In a European context, the only identified study, from 2012 [9], found that 13.5% of schools offered no UGPCT at all and 19% had either a total lack of UGPCT or a very brief exposure (defined as less than one month). However, it was not possible in this study to derive a figure for the mean amount of curriculum provision. Literature [9] also suggested that curriculum provision is less in Eastern/Southern countries than in the North/West, however no statistically significant correlation could be established.

Studies in a UK context have found a wide variation in exposure, ranging from 0–40% of the clinical curriculum: Here, trends indicate that exposure increased from less than 1% in 1968 to 13% by 2008, plateaued at this level until 2015 [10] and has now fallen to 9.2% [11]. We could not identify any other country-specific data.

# Human and financial resources for UGPCT

We found no European or international studies exploring the human resources available to support UGPCT. UK studies found that integrated teaching and research departments of PC reduced by 50% over ten years [10]. There is also wide variation in support for teaching, and 75% of schools report difficulty recruiting teachers [11].

We found no data on the financial resources or support available to PC departments or for UGPCT within European medical schools, except in the UK. There practices were paid below the costs incurred to deliver clinical teaching in their practices [11]. Evidence suggests large disparities between payments for teaching in hospitals and PC [12], although in the UK, evidence-based policy advocacy has been effective in equalising these rates [13].

## Recommendations for increased UGPCT

Recruitment to medical professions is multifactorial, involving role models, perceived remuneration and conditions, personality of teachers and other factors [14]. In UGPCT, there is a clear relationship between the amount of exposure to clinical experience (placements) and career choice [7]. Because of this, there

have been calls to increase the amount of European UGPCT [15–18]. A minimum exposure of one month in placements has been suggested [17, 19]. However, to fulfil minimum workforce requirements, a minimum of 25% has been suggested, based on empirical data [7, 15, 20]. Studies on implementation of these recommendations in PC, find that policies are inconsistently implemented and often unacceptably slow [21].

## Objectives

There appears insufficient data on UGPCT to inform policy. The purpose of this study was therefore:

- to provide data on provision of UGPCT: amount, resources and organisation,
- to establish European trends and regional variation, where possible,
- to further explore what factors may be associated with under-provision of UGPCT at European medical schools.

## Materials and methods

# Design and reflexivity

An online cross-sectional survey in European medical schools was conducted by the European Academy of Teachers in General Practice/Family Medicine (EURACT; https://www.euract.eu/) Basic Medical Education Committee during the spring of 2023, using SurveyMonkey. The questionnaire was based on a validated tool that had been used in two UK surveys of UGPCT which we adapted linguistically and culturally [7, 10]. The study was approved by the Ethics Committee at the University of Würzburg, Germany, ref. no. 2022-1205-01. The study was unfunded.

Given the challenges outlined, we started from an assumption that UGPCT was under-provisioned and therefore sought to identify possible barriers and solutions to strengthening UGPCT. Questionnaire design was informed by an emancipatory approach [22] that sought to further understand these challenges – and through this, better inform policy development. Emancipatory research has an empowerment focus and aim to change power relationships, fostering self-advocacy and self-determination often focussing on poorly represented or marginalized groups. Given our assumptions outlined above and that data collection and design is not inherently objective or value free, we found this approach most aligned with our assumptions and values. Other theoretical approaches were considered but there were issues in operationalising these for empirical use. [23].

The questionnaire contained closed questions with Likert scale or numeric responses, and free-text comments. It was piloted twice among members of the EURACT council and subsequently refined. The sampling approach followed the protocol established in similar earlier surveys [10, 11]. EURACT has representatives in 42 countries. Each representative was responsible for distribution of the questionnaire in their own country utilising informal knowledge of likelihood or reply combined with a sampling strategy

that focussed on providing maximal variation for such informally defined characteristics such as rural/urban, traditional/progressive.

All medical schools were sampled in countries where less than ten medical schools exist, or a maximum of ten medical schools where there were more. We adopted this approach to give voice to smaller / less represented countries following our emancipatory approach. Reminders were sent three times.

# Closed questions, quantitative analysis

To discern regional variations, we used the EuroVoc [24] classification of countries (Fig. 1)

- Northern Europe: Denmark, Estonia, Finland, Lithuania, Norway, Sweden.
- Western Europe: Austria, Belgium, Germany, The Netherlands, Switzerland, UK.
- Central and Eastern Europe: Bulgaria, Croatia, Czechia, Georgia, Hungary, Kosovo, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovenia, Ukraine.
- Southern Europe: Greece, Israel, Italy, Malta, Spain, Turkey.

Analyses were done in SPSS 29. Missing data were treated as missing, and percentages were calculated using valid denominator data. Chi square test or Fisher's exact test were used as appropriate for comparing proportions, and Mann-Whitney U-test or Kruskal-Wallis test as appropriate when comparing continuous or ordinal data.

## Open question, free-response analysis

A thematic analysis approach was used [25]. Here, each question was initially independently analysed by AH, AS, HK and NZ. The process was then repeated with each question being independently analysed by two other members of this team. Responses were taken at face value with no predetermined analytic framework. Data were coded manually and divergences between interpretations discussed as a group. Emergent themes were then identified, agreed and defined involving weekly online meetings. Verbatim quotations that best fitted these defined themes were then extracted.

## Results

From 201 invited medical schools, we received 108 responses. 21 responses were excluded due to missing information. This produced 87 valid responses from 32 countries giving a response rate of 43.3% (Additional file 1, Supplementary table 1).

# Regional variety

Many of the results show significant regional variations, above all in funding of UGPCT, support for PC-teachers, and status of UGPCT in medical schools (Fig. 1 (the results in Fig. 1 are presented in more detail in Additional file 1, Supplementary tables 2)). [Figure 1 near here]

# Curriculum provision

# At the medical school

Students learned about PC at the medical schools in 95.1% of schools for a median of 70 hours (IQR 40–135) (Additional file 1, Supplementary table 2). Teaching was delivered in predominantly traditional ways including small groups, lectures, flipped classroom, and blended learning.

PC physicians often taught other subjects at the medical schools as well; a median of 71 hours (IQR 30–149) was delivered by them during the five or six years of medical studies.

There were no significant regional differences in ease of recruiting PC-teachers (Fig. 1) and recruitment was rated 'neutrally' overall on a 1–5 Likert scale (3.1; SD 1.3). Free-text comments were more negative than Likert ratings but showed that teaching was facilitated by good relationships between the university and local PC physicians/PC organisations, but sometimes was hindered by university policies that excluded PC physicians, or not paying for UGPCT.

*Our GPs are private doctors, and it is not allowed the faculty of medicine to engage them in teaching lectures. Although they have PhD, they can't be elected in academic position. (Central/East)*
It is difficult because there is no payment for seminars. GPs teaching is volunteer. (South)

An additional recruitment challenge was that in many Central/Eastern and Southern medical schools, teaching could be in several languages. This was sometimes because of varying languages being used in the country and/or because universities invite foreign students:

*In addition, knowledge of English and Russian is a necessary requirement, because there are three faculties of medicine in our university: X, English and Russian. (Central/East)*

# On placements

Students had practical experience of PC (i.e. placements in PC setting) in 95.0% of schools. This comprised 8.5% (IQR 4.8–14.6; n = 52) of all clinical experience in undergraduate curriculum. There were significantly ($p < 0.001$) more hours of placements in Northern (237) and Western Europe (246), compared to Central/Eastern (126) and Southern Europe (137) (Fig. 1). Recruitment of the practices was again rated neutrally (3.2; SD 1.2) but free-text comments were on occasion positive:

*It is compulsory (part of contract with the local government) for general practices in our region to participate in clinical training of medical students. (North)*

Or more commonly negative:

*Tutorship teaching (placements) in practice is transformed into credits for continuous medical education), but no payment. (South)*

Where it existed, negative attitudes to PC recruitment appeared to predict restrictive policies which compounded the considerable service obligations in PC and made provision of placements challenging:

*This is a huge challenge. While many practices are keen to teach there are many barriers that prevent them – lack of remuneration, lack of space, work pressures, lack of locum cover etc. (West)*

Despite the small amount of teaching in PC settings, there was a rich variety of learning methods employed.

The confidence to influence the curriculum was statistically significantly lower in South compared to other regions, 2.8 vs. 3.4–3.8 ($p = 0.012$), as was the perceived status of GP/FM teaching, 3.1 vs. 3.6–4.1 ($p = 0.021$) on a 5-point Likert scale.

Cultural and political attitudes towards PC accounted for most of the free-text comments:

*General practice plays a little role in the curriculum. But it has been getting better in recent years. The value and relevance of general practice is understood and appreciated and therefore the voice of GP is heard more easily. (North)*

## Support for UGPCT

## Teacher development

The most common form of PC-teacher development was workshops, offered to 67.8% of faculty staff and 62.1% of GP-teachers. However, 14.9% reported no teacher development programmes for faculty staff and 18.4% for GP-teachers (Fig. 1).

Payment was sometimes offered in the form of CME points or a letter of recognition.

*In University, recognition as Contract Professor is renewed year by year but payed low. In Practices, no money but good points as credits for CME. (South)*

## Finance for teaching

Most respondents (67.9%) did not know how much money was spent on UGPCT. When asked if respondents would feel happy approaching finance colleagues at universities to find out more information, many hesitated.

## I do not want to ask this question to my finance colleagues. (West)

## I don´t even know, whom to ask! (Central/East)

In 38.8% of the medical schools, practices were not paid for student placement, and in 28.4% the pay for PC-teachers was smaller than for other specialties (Fig. 1). Furthermore, the payment often did not cover operating costs.

*Government does not fund primary care teaching, only hospitals receive funding for having students, so Universities must finance all GP teaching themselves. (North)*

*Faculty will increase the reward to 80 EUR/10 days for GP 10 days placement (8 EUR/day). (Central/East)*

There were statistically significant variations in remuneration between the European regions: Practices got paid for student placement less frequently in South (29.6%) and Central/East (54.2%), compared with West (88.9%) and North (94.4%; $p < 0.001$).

# Departmental organisation of UGPCT

In 77.6% of the medical schools, teaching and research were organised in the same department. These medical schools had more hours of PC teaching, better pay, more ability to influence curriculum, higher status and more staff than in schools where teaching and research were carried out separately (Fig. 2, Additional file 1, Supplementary tables 3–5).

[Figure 2 near here]

# Approaching challenges and innovations

Lack of GPs, funding, and discrimination were the commonest challenges in UGPCT (Table 1).

Table 1
Challenges of undergraduate education in primary care in European medical schools

| **Theme Examples of free-text comments** |
|---|
| Lack of GPs and time |
| • *Increasing workload for GPs (North)*<br><br>• *General lack of GPs will make it more difficult in the next years to recruit new practices; it will be more difficult to find new personnel for our institute, because we have a general shortage of skilled personnel. Many of our own employees have limited employment contracts, which is not attractive for them (this is a general problem in academia in my country) (West)*<br><br>• *Shortage of GPs: GPs are quite a bit older, which is great for the experience, however, as they are retiring, it is difficult to find other GPs to replace them. (West)*<br><br>• *Increased workload in general practitioners' practices and therefore decreased willingness to train students. (West)*<br><br>• *Lack of the hours available for the GP teaching (Central/East)*<br><br>• *Lack of a GP network affiliated to the University to support teaching (Central/East)*<br><br>• *Remote GP clinical tutors are less attended (South)*<br><br>• *Not enough teachers/teaching staff in comparison to the teaching we do. (South)* |
| Funding |
| • *Low salary for GPs in universities (North)*<br><br>• *No financing for more GP clinic time (North)*<br><br>• *Reformation of the health system, the chaos of funding and organizing (North)*<br><br>• *Reducing funding for teaching and universities (West)*<br><br>• *Financial inequity with other specialties (West)*<br><br>• *Funding for external collaborators (Central/East)*<br><br>• *Lack of finances (Central/East)*<br><br>• *Lack of funding for research and publications (South)*<br><br>• *Remuneration of GP/FM doctors but also health care professionals for PHC settings that participate in teaching (South)*<br><br>• *Now we are getting dark finances, the first to be cut is medicine (South)* |
| Discriminatory practices |
| • *Government does not fund primary care teaching, only hospitals receive funding for having students, so Universities must finance all GP teaching themselves (North)*<br><br>• *Other specialities are shrinking and GP growing. This is hard to accept for some specialists (North)*<br><br>• *(Other) specialists are often booked to do GP lectures by management. (West)*<br><br>• *[…], it is not uncommon that the specialist treats the GP badly even during the lecture. (West)* |

| Theme Examples of free-text comments |
| --- |
| • *Administration doesn't understand GP, other departments don't understand GP, 6th year medical students don't understand GP. (Central/East)*<br><br>• *I wanted the merit of GP associates to be better recognized by naming their offices university offices, not accepted by the university (Central/East)*<br><br>• *Annually it is necessary to renew the collaboration contract, I wanted it to be of longer duration, it is not possible, the legislation is often very restrictive. (Central/East)*<br><br>• *Lack of specific regulations for contracting external resources (practices) from Universities (Central/East)*<br><br>• *Although FM specialization is increasing day by day, other branches are preferred more by students in post-graduate specialization education. Unfortunately, preventive health services, which are required to be implemented in accordance with the basic principles of family medicine in our country, cannot be implemented as they should be due to the high number of patients and excessive workload. In addition, physician salaries are lower than other branches. (South)*<br><br>• *The fact we are ruled by non-scientifical unions (South)*<br><br>• *The fact we are not academics (South)*<br><br>• *The national health politicians generally are not defending primary care and while making decisions they forgot to ask the teacher working in the area. (South)*<br><br>• *We have conflict with administrative units about defining and acting according to the education standards of family medicine. They generally see family medicine career as a chacker stone. (South)*<br><br>• *Political stops to innovation (South)* |
| Lack of GP practices |
| • *Lack of places for training due to large amount of students and shortage of GPs (North)*<br><br>• *Recruitment of practices (West)*<br><br>• *Shortage of placements in practices (West)*<br><br>• *More GP practices to be licensed (Central/East)*<br><br>• *Lack of GP settings (Central/East)*<br><br>• *To find GP and recruit places (such as clinics and practices) for student learning (Central/East)*<br><br>• *Opening new and sufficient number of training centers in the field (To explain and follow the subject persistently and patiently) (South)*<br><br>• *Remote GP clinical tutors are less attended (South)*<br><br>• *There are not enough family health centers for the number of students (South)* |
| Too many students |
| • *Large amount of students (North)*<br><br>• *Increasing number of students but equal number of staff (West)* |

| Theme | Examples of free-text comments |
| --- | --- |
| | • *The large number of students in the group of 12–13, which requires the adjustment of teaching-learning-evaluation methods during the stay in family doctors' offices (East/Central)* |
| | • *Increasing number of students at medical school (South)* |

Many didactic/pedagogic approaches were listed such as early clinical exposure, longitudinal placements, and increasing interprofessional learning, as well as simulations, ultrasound, interactive online textbooks, virtual reality, and live streaming. These innovations have involved overcoming substantial organisational changes such as collaboration between practices. However, there were a substantial number of negative comments pertaining to political manoeuvring or other discriminatory practices to stop innovations – mostly from the Southern region. Examples of reported innovations as well as challenges are outlined in Tables 1–2.

Table 2
Innovations of undergraduate education in primary care in European medical schools

| Theme | Examples of free-text comments |
|---|---|
| Pedagogic or didactic practices | |
| | • *We place students during 9 semesters. We let student come to the same GP clinic during semester 3–7 and then another clinic during semester 12 to promote/teach […] continuity of care (North)*<br>• *GP leadership in key educational clinical topics (North)*<br>• *New topics (ultrasound and digital communication) (West)*<br>• *Interprofessional education - medical, PA, nursing and paramedic students attending placements/teaching together (West)*<br>• *Mentoring program (experienced doctors/students) (West)*<br>• *The OSCE method for the assessment after the clinical stage of family medicine (Central/East)*<br>• *Simulation center practical stages with access to varied pathology (Central/East)*<br>• *GP visits planned for semester 1 medical school students (South)*<br>• *Use of logbook from 1st year and a portfolio of interesting cases (South)* |
| Organisational practices | |
| | • *Collaboration with regional health centres; we have joint positions for 13 part time teachers working primarily as GPs and 20% at the university (North)*<br>• *Clinical education units in primary health care (North)*<br>• *"Landarztquote": Up to 6,5% of all new medical students oblige themselves to work later as GPs in a rural area; we are currently developing a specific GP-focussed curriculum (West)*<br>• *Developing new online curriculum based on principles of primary care (West)*<br>• *Continuous development of seminars together with staff and GP teachers (West)*<br>• *Formation of the GP network together with partner clinics for placement of 6th semester students in GP practices (Central/East)*<br>• *Yearly workshops for new mentors (that all new mentors have to attend), which are getting modelled after Leonardo I course of EURACT (Central/East)*<br>• *Establishing a research unit for GP/FM and primary health care (South)*<br>• *The rapid increase in students' interest in family medicine and the fact that we can get assistants with very high scores in specialty exams (South)*<br>• *First academic FM department in X with 30 years of experience. (South)* |
| Discriminatory practices instead of innovations | |
| | • *I cannot report on any innovation (Central/East)*<br>• *Financial and political problems are worrying a lot (South)*<br>• *Blocked access for GPs to assessing clinical exams (South)* |

| Theme | Examples of free-text comments |
|---|---|
| | • *Matters are going really worse in the last years (South)* |
| **CHALLENGES** | |
| Lack of GPs and time | |
| | • *Increasing workload for GPs (North)*<br><br>• *General lack of GPs will make it more difficult in the next years to recruit new practices; it will be more difficult to find new personnel for our institute, because we have a general shortage of skilled personnel. Many of our own employees have limited employment contracts, which is not attractive for them (this is a general problem in academia in my country) (West)*<br><br>• *Shortage of GPs: GPs are quite a bit older, which is great for the experience, however, as they are retiring, it is difficult to find other GPs to replace them. (West)*<br><br>• *Increased workload in general practitioners' practices and therefore decreased willingness to train students. (West)*<br><br>• *Lack of the hours available for the GP teaching (Central/East)*<br><br>• *Lack of a GP network affiliated to the University to support teaching (Central/East)*<br><br>• *Remote GP clinical tutors are less attended (South)*<br><br>• *Not enough teachers/teaching staff in comparison to the teaching we do. (South)* |
| Funding | |
| | • *Low salary for GPs in universities (North)*<br><br>• *No financing for more GP clinic time (North)*<br><br>• *Reformation of the health system, the chaos of funding and organizing (North)*<br><br>• *Reducing funding for teaching and universities (West)*<br><br>• *Financial inequity with other specialties (West)*<br><br>• *Funding for external collaborators (Central/East)*<br><br>• *Lack of finances (Central/East)*<br><br>• *Lack of funding for research and publications (South)*<br><br>• *Remuneration of GP/FM doctors but also health care professionals for PHC settings that participate in teaching (South)*<br><br>• *Now we are getting dark finances, the first to be cut is medicine (South)* |
| Discriminatory practices | |
| | • *Government does not fund primary care teaching, only hospitals receive funding for having students, so Universities must finance all GP teaching themselves (North)*<br><br>• *Other specialities are shrinking and GP growing. This is hard to accept for some specialists (North)*<br><br>• *(Other) specialists are often booked to do GP lectures by management. (West)* |

| Theme | Examples of free-text comments |
|---|---|
| | • *[…], it is not uncommon that the specialist treats the GP badly even during the lecture. (West)*<br><br>• *Administration doesn't understand GP, other departments don't understand GP, 6th year medical students don't understand GP. (Central/East)*<br><br>• *I wanted the merit of GP associates to be better recognized by naming their offices university offices, not accepted by the university (Central/East)*<br><br>• *Annually it is necessary to renew the collaboration contract, I wanted it to be of longer duration, it is not possible, the legislation is often very restrictive. (Central/East)*<br><br>• *Lack of specific regulations for contracting external resources (practices) from Universities (Central/East)*<br><br>• *Although FM specialization is increasing day by day, other branches are preferred more by students in post-graduate specialization education. Unfortunately, preventive health services, which are required to be implemented in accordance with the basic principles of family medicine in our country, cannot be implemented as they should be due to the high number of patients and excessive workload. In addition, physician salaries are lower than other branches. (South)*<br><br>• *The fact we are ruled by non-scientifical unions (South)*<br><br>• *The fact we are not academics (South)*<br><br>• *The national health politicians generally are not defending primary care and while making decisions they forgot to ask the teacher working in the area. (South)*<br><br>• *We have conflict with administrative units about defining and acting according to the education standards of family medicine. They generally see family medicine career as a chacker stone. (South)*<br><br>• *Political stops to innovation (South)* |
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| | • *Large amount of students (North)*<br><br>• *Increasing number of students but equal number of staff (West)* |

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| | • *The large number of students in the group of 12–13, which requires the adjustment of teaching-learning-evaluation methods during the stay in family doctors' offices (East/Central)*<br>• *Increasing number of students at medical school (South)* |

## Discussion

# Summary of results

To our knowledge this is the first detailed study on a continental scale among 32 countries showing comprehensive data on UGPCT in Europe. It shows work-based experience in PC now take place in 95% of European medical schools, however it comprises only 8.5% of the total clinical placements. Statistically significant regional variation exists in this placement provision.

Most respondents could not respond to funding questions. Many who did respond reported that PC educators receive less remuneration than other specialists. This is in line with the UK data [10].

# Strengths and limitations

Brekke et al reported that in 2012 87% of schools taught about PC in lectures and small groups [9]. We report a figure of 95% with higher percentages being delivered in Northern/Western regions. There is continuing doubt as to what UGPCT is: for example, in some schools, generic skills such as communication skills are taught as ‘primary care’. It is possible that desirability bias may have over-inflated reported figures of UGPCT provision. A European definition and a core curriculum for UGPCT exist [17], and better implementation of this might help to address misunderstandings about what disciplinary knowledge and therefore teaching about PC is.

A strength of our study is our emancipatory approach; the questionnaire did not only analyse UGPCT in Europe but also explored how policies on provision may be improved and provided an opportunity for learning and empowerment by participants. For example, questions regarding payment for placements were designed to collect information but also served to make participants aware that payments for teaching existed and give them the opportunity to take appropriate action.

The response rate is acceptable, and the study is based on a validated instrument. Data has been collected with sufficient granularity to discern significant regional differences which may contribute to more evidence-based European policies. The EURACT research group is multinational, networked and specialises in UGPCT. The maximum of ten medical schools for larger countries was set to better gain an overview of differences across Europe, giving the smaller countries a stronger voice, in accordance with the emancipatory approach. The EURACT national representatives were instructed to choose a representative sample of the country’s medical schools. The representatives knew key persons in their country and could thus personally deliver the questionnaire to the most suitable respondents, as we have done in previous studies [26]. This may have introduced bias in the recruitment process in terms of the

personal preferences of the national representative. On the other hand, the national representatives' thorough knowledge of their own country and follow-up of the respondents probably increased the response rate and reduced the risk of recruitment bias. Collaboration between the authors, other EURACT representatives and respondents enabled us to refine the responses and corroborate the data with clarifying questions to the respondents, hence improving the quality of the data.

The piloting stage highlighted multiple common misunderstandings due to cultural differences and may have not been fully resolved: for example, definitions of 'teaching units' (range 45–120 minutes), 'days' during placements, or 'small group teaching' all differed between countries and may have affected the accuracy of replies, despite our attempts to adapt the questionnaire for European use.

The study was carried out during COVID. This may have affected replies, and several countries did not reply at all. We suspect strong desirability bias: non-respondents may have less UGPCT. There also appeared to be a divergence between the ratings on Likert scales and the free-text comments, which tended to paint a more pessimistic picture. Divergences in replies to the same question being asked using different data collection methods is well documented in clinicians [27].

At most schools, innovative teaching methods in PC have recently been implemented or are planned.

Our emancipatory approach in actively seeking problems may have resulted in an overly negative interpretation of the subject, arguably problematising situations unnecessarily. However, we were mindful of change theory that suggests that addressing barriers is an effective approach in bringing about change [28].

# Implications for practice

It seems paradoxical that UGPCT receives such little attention, given the evidence of its efficacy in teaching undergraduates [29], the clear relationship between PC experience and career choice, and the overriding importance of PC in health systems. Based on our findings, the implications for practice might be:

- Quality teaching of PC to enthuse our future workforce needs a high level of personal commitment – which must be adequately rewarded. Action needs to be taken in medical schools or their regulating bodies to address inequality and systematic underpayment.
- In faculties where PC teaching and research are organised in the same departments, the amount of teaching is larger, the remuneration better and the status in the faculty higher. PC leaders can therefore use this data to advocate for more integrated departments of PC.
- Further research and policy enactment is urgently needed regarding uneven and in places inadequate UGPCT – often as a result of asymmetric policies concerning UGPCT.

However, the effects of this discrimination on future workforce provision may necessitate more robust approaches from organisations that sit outside the institutions where this is taking place.

There is a crisis in European PC workforce numbers to the extent that it endangers equitable access and public health [6]. UGPCT needs to be seen in the context of the trajectory towards unsupervised independent practice as a GP or family doctor - with responsibility for the acute, chronic, psychological and preventative aspects of care. Postgraduate training after medical school is then clearly essential. In some countries (e.g. in Southern regions) there is no postgraduate training for PC. Additionally, increasing numbers of foreign students now study in countries where they never learn the native language. Patients in any part of Europe can therefore be seen by physicians who have had no undergraduate or postgraduate training in any aspect of PC and who are currently moving freely between European countries.

Recognition of PC as a specialty by the European Commission would be a significant step towards addressing these inequalities and establishing a training continuum in Europe that is fit for purpose.

## Abbreviations

CME
continuous medical education
EURACT
European Academy of Teachers in General Practice/Family Medicine
FM
family medicine
GP
general practice/practitioner
IQR
interquartile range
PC
primary care
UGPCT
undergraduate primary care teaching (medical students)

## Declarations

# Ethics approval and consent to participate

This study was conducted in accordance with the Declaration of Helsinki (2013 revision). Ethical approval was obtained from the Ethics Committee at the University of Würzburg, Germany, ref. no. 2022-1205-01. All participants provided informed consent by responding to the questionnaire.

**Consent for publication**

Not applicable.

# Competing Interests

The authors declare no competing interests.

# Funding

The study was unfunded.

# Author Contribution

AH was responsible for conceptualisation, methodology, qualitative data analysis, writing (discussion, language editing) and data curation.OMV was responsible for conceptualisation, methodology, quantitative data analysis and data editing/curation and writing (results, literature, figures).NZ was responsible for literature research, qualitative data analysis and data curation.SV was responsible for conceptualisation, qualitative data analysis, and reviewing. AJ was responsible for conceptualisation, literature research, software, data curation and language. FC was responsible for conceptualisation and literature research.IL was responsible for conceptualisation and reviewing.AS was responsible for conceptualisation, methodology, qualitative data analysis, writing (introduction, abstract, discussion), editing, data curation (equally with HK).HK was responsible for conceptualisation, methodology, supervision, qualitative data analysis, writing (results, discussion, tables), editing, project administration and data curation (equally with AS).All authors reviewed the manuscript.

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# Data Availability

Original data is not publicly available. Some anonymised data can be shared upon reasonable request from the corresponding authors.

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# Figures

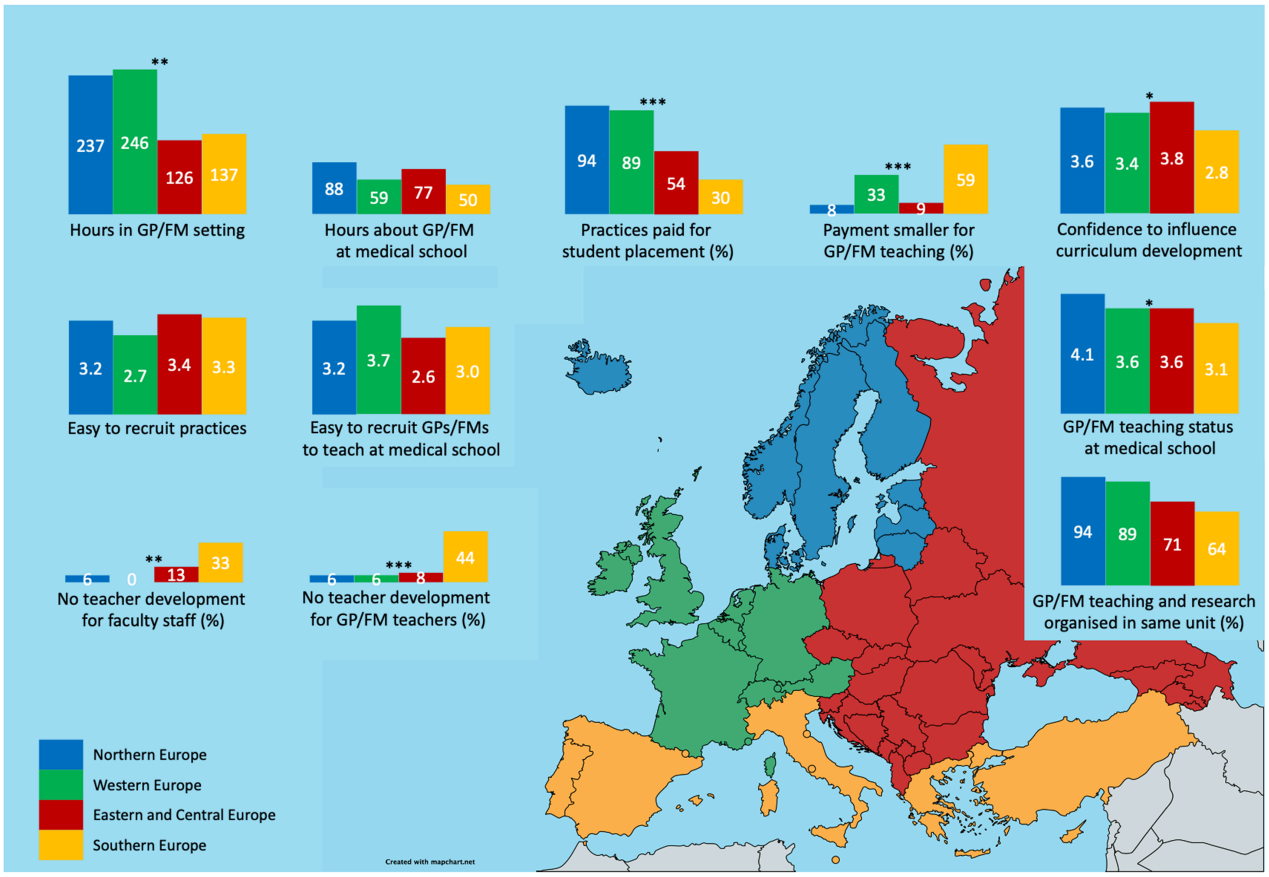



**Figure 1**

**Quantitative analysis showing EuroVoc [24] regional variations**

Confidence rated on a Likert scale ranging from 1 = not confident at all to 5 = very confident.

'Easy to recruit' rated on a Likert scale ranging from 1 = not easy at all to 5 = very easy.

'Status' rated on a Likert scale ranging from 1 = very poor to 5 = excellent.

FM: family medicine; FMs: family medicine physicians; GP: general practice; GPs: general practitioners.

* p<0·05; ** p<0·01; *** p<0·001.

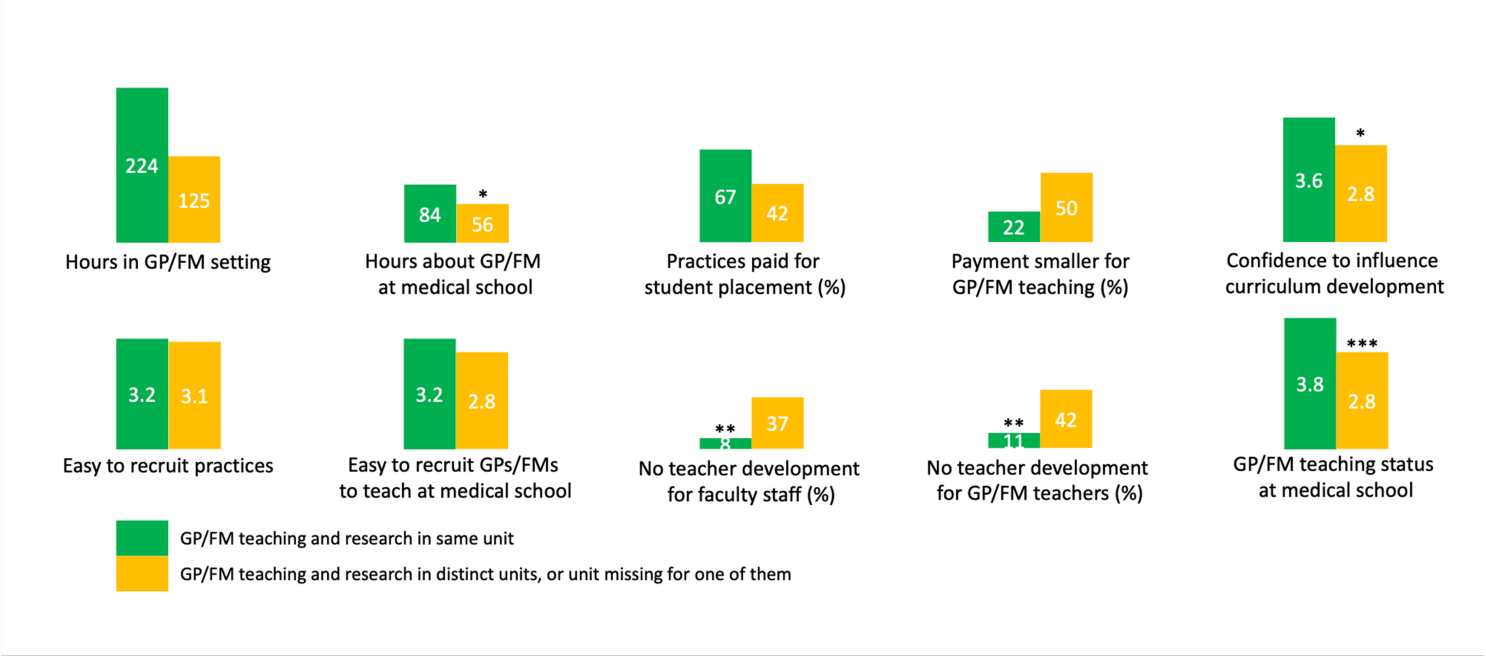



**Figure 2**

**UGPCT in European medical schools per departmental organisation**

Confidence rated on a Likert scale ranging from 1 = not confident at all to 5 = very confident.

Easy to recruit rated on a Likert scale ranging from 1 = not easy at all to 5 = very easy.

Status rated on a Likert scale ranging from 1 = very poor to 5 = excellent.

FM: family medicine; FMs: family medicine physicians; GP: general practice; GPs: general practitioners.

* p<0·05; ** p<0·01; *** p<0·001.

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