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Barriers for Continuous Medical Education: Cross-sectional questionnaire study among Danish general practitioners

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Abstract

Background: General practitioners' (GPs') participation in continuous medical education (CME) is essential for patientcare, wellbeing of the GPs, and healthcare expenditures. A quarter of the Danish GPs did not use their reimbursement for CME in 2022. Knowledge of barriers for participating in CME is limited.

Aim: To analyse GPs' barriers for participation in CME and patterns in perceived barriers.

Design & setting: The study population comprised all 3257 GPs in Denmark, who in May 2023 were registered as entitled to reimbursement for CME.

Methods: The response rate was 1303/3257 (40%). Based on a question about use of CME, the respondents were divided into frequent, partial, and seldom users. Partial and seldom users answered questions about barriers related to CME (n = 726). The presence of barriers was quantified, and a Latent class analysis (LCA) was used to stratify GPs according to their barrier patterns.

Results: Most frequent barriers were: Too busy (68%), fully booked courses (47%), and no substitute (41%). Based on the LCA, we found three distinctive patterns, clustering around: GPs from clinics with no tradition for CME (17%), GPs who used time on professional work outside clinic (teaching, organisational work) (43%), and GPs who were personally or professionally affected (40%). Singled-handed and male GPs were slightly overrepresented among seldom-users.

Conclusions: We have identified barriers for CME. We found three different profiles of GPs who perceived different patterns of barriers. Identified patterns in barriers should be considered in future CME initiatives.

Keywords: General practice, continuous medical education, barriers

How this fits in

General practitioners' (GPs') participation in continuous medical education (CME) is essential for the quality of patientcare (1-3), the wellbeing of the GPs (4), and the level of healthcare expenditures (5). The value of CME is well documented and generally accepted but nevertheless some GPs deselect CME. Only few studies address barriers for GPs' participation in CME. To recruit more GPs for CME, we need knowledge to make CME more achievable and attractive for GPs who are currently deselecting CME.

Background

Continuous medical education (CME) and continuous professional development (CPD) describe the process where healthcare professionals engage in ongoing learning and skill development to maintain, update, and enhance their professional knowledge, skills, and competencies. In this article, we use CME to describe this process.

Organisation of CME for general practitioners

Different countries have chosen different models to ensure postgraduate education of GPs. CME can be mandatory, or CME can be voluntary, expecting doctors to have an ethical and professional obligation to undertake further education. CME can be based on public funding or rely on sponsorship from private or commercial actors. The way CME-programmes are organized seem to influence the outcome (1, 6, 7). Deliberate recruitment to CME, active learner participation and mixed interactive and didactic educational meetings enhances the outcome (1). Funding relying on the pharmaceutical industry can bias the educational goals and topics (6, 8). From a patient perspective, however, the most important issue is the educational outcome and the improvement of clinical care (9).

Within Europe, CME varies from voluntary CME administered by the individual GP to partly or mainly mandatory CME, with or without recertification (7).

The Danish GP CME-programme consists of both mandatory centrally planned activities and self-chosen voluntary activities (10). Both types of CME are remunerated. CME arranged by pharmacological industry cannot be remunerated. The CME refund for a GP is approximately €6500 per year (11). The CME-programme is based on professional integrity and trust without recertification (10). Despite a well-remunerated and comprehensive CME model a quarter of Danish GPs have not used remuneration for CME in 2022 (12).

Barriers for participation in CME

Few studies had explored barriers for participation in CME. A study from Portugal found lack of time and bureaucracy overload as barriers for implementation of a digital CME platform (13). Two Irish studies found that main barriers for participation in mandatory CME and maintenance of professional competence was lack of protected time and financial costs of CME-participation (14, 15). Other significant barriers were expense of locum-cover, lack of high-quality and relevant CME-themes, inconvenient locations, and technical difficulties (14, 15).

However, we do not know if these barriers are relevant to GPs working under the Danish model. In a former qualitative study (16), we uncovered 18 barriers for participation in CME. We do not know the magnitude or significance of these barriers. In a nationwide questionnaire survey in Denmark, we aim to generate quantitative data about barriers for participating in CME.

The objectives are:

1. To determine the frequency of barriers for CME
2. To explore disparities in barriers between partial and seldom users of CME.
3. To identify profiles of general practitioners who experience barriers for participation in CME.

Methods

Setting

In Denmark there is a specified specialist training scheme that lasts for six years to qualify as a GP (17). General practice plays a vital role in the Danish health care system (18). GPs are responsible for most of primary care and serve as the patients first contact to the health care system (18). Referral from a GP is required for most office-based specialists and in- and outpatient hospital treatment (18). The average number of listed patients per GP is 1600.

Study population

All GPs in Denmark who in May 2023 were registered as entitled to reimbursement for participation in CME (n = 3257).

Study design

Cross-sectional questionnaire study of Danish GPs's motivation and barriers for participation in remunerated CME, and the GPs attitudes towards CME activities. In this article, we report data regarding barriers for participating in CME.

Data collection

In May 2023, all registered GPs in Denmark received an e-mail invitation with an electronically administered questionnaire. Non-respondents were sent a reminder after one and two weeks, respectively. The response ratio was calculated as respondents/study population. The link to the questionnaire was personal and contained a unique serial number. Demographic data was obtained through the questionnaire

and through a central database in the Association of Danish General Practitioners (PLO). The research group received the anonymized data set. Data were transferred to a secure server.

Questionnaire

The questionnaire was developed for the purpose by the research group based on literature search and interviews with 10 Danish GPs who had not used reimbursement for CME in a 2-year period (16). The questionnaire was evaluated for construct and content validity using an educational expert review and a pilot test.

Six skilled persons reviewed the questionnaire: two with research experience, two educationalists and two GPs with educational insight. Four GPs were strategically selected with best variance in sex, seniority as a GP, geography, and practice type. They participated in a dynamic and repeated pilot test. The questionnaire was modified in the process for clarity and comprehensibility and for content and perspective.

Respondents were initially asked: "Do you use all your reimbursement for CME?", with response options being: "Frequent use", "Partial use," "Seldom use", or "Do not know." "Partial users" and "Seldom users" were asked to graduate 18 barriers on a Lickert scale (strongly agree, agree, disagree, strongly disagree). See Supplementary Box 1 for questions regarding barriers.

Statistical methods

Descriptive statistics were used to examine the distribution of responses, expressed as numbers and percentages, among participants in the investigated categories "Strongly agree," "Agree," "Disagree," and "Strongly disagree" in relation to the different questions about barriers. Categories with a limited number of respondents was merged due to the Danish GDPR-regulations.

P-values, used to assess differences in barriers between partial users and seldom users, were calculated using chi-square test or Fisher's exact test, when the frequency in one of the cells was less than 5.

To investigate the representativeness of our study population, we compared baseline characteristics on sex, age, practice type, and geography in our study population with data from the Association of Danish General Practitioners (PLO) covering all GPs in Denmark.

To investigate whether certain barriers were more likely to be mentioned together, we employed the statistical method Latent Class Analysis (LCA) (19). LCA identifies patterns among selected barriers potentially revealing subgroups of GPs associated with these barriers. LCA is a statistical method employed to identify distinct sub-groups within a population that share similar characteristics (20). The Akaike Information Criteria (AIC) and the Bayesian Information Criterion (BIC) were used to evaluate the model fit.

Models with more than three latent classes were incompatible with the data. Among the models with two and three classes, the model with three classes exhibited the best fit based on both AIC and BIC. The latent class analysis exclusively focused on barrier-related responses and were not adjusted for covariates. Nevertheless, differences in covariate distributions across the three identified classes were assessed using chi-squared test. All analyses were conducted using Stata version 18.0.

Results

Of the 3,257 invited GPs, 1,303 GPs (40%) took part in the survey. In this article, we focus on a subset of 726 GPs categorized as "seldom users" (n = 173) and "partial users," (n = 553) as they form the study population regarding barriers to CME. Flowchart of study population is demonstrated in Figure 1.

[Figure 1 around here].

Representativeness of study population

Demographic factors in the respondent group (sex, age, practice type, and geographical regions in Denmark) showed a balanced distribution compared to all Danish GPs except from a larger proportion of female respondents (68%) compared to overall female representation in the GP population (60%) (Supplementary Table 1).

Association between use of reimbursement and demographic data

GPs in singled-handed practices and male GPs were overrepresented and female GPs were underrepresented among "seldom users." The other demographic data were evenly distributed. Table 1 shows characteristics of our study sample ("partial users" and "seldom users") compared to all respondents with p-values for differences between groups demonstrated in Supplementary Table 2.

[Table 1 around here.]

Perceived barriers

The most frequently barrier (recognized by 68%) was being too busy. Figure 2 shows the extent to which GPs expressed agreement or disagreement within each barrier. Differences in barriers between partial and seldom users are demonstrated in Supplementary Tables 3-6.

[Figure 2 around here]

Fully booked courses and difficulties in finding a substitute were the second and third most common barriers, whereas lack of tradition for CME, patient's complaints, and collaboration difficulties were reported less often.

Three characteristic patterns of barriers

The statistical method Latent Class Analysis revealed three subgroups (classes) among GPs. The total of 726 GPs were categorized into three classes: Class one (n = 124, 17% of the GPs), class two (n = 310, 43% of the GPs), and class three (n = 292, 40% of the GPs).

The distribution of the three classes and the probabilities of barrier responses reported is shown in Figure 3. When the reported barrier deviates from the dashed line in the class color, it indicates that the barrier is selected more often or less often than expected based solely on the size of the class.

[Figure 3 around here]

Class 1 reported 'No tradition for CME' as their main barrier (42%). 'Being completely up to date' (6%) and 'collaboration difficulties' (8%) were uncommon barriers in this group. The other barriers were more evenly distributed corresponding to class 1's share of respondents.

Class 2 reported 'teaching' (57%), and 'being completely up to date' (52%) as frequent barriers. 'Lack of tradition for CME' was less frequently reported (12%). Despite activities outside clinic (teaching), class 2 had the lowest probability of reporting 'lack of substitute' (27%) and being 'too busy' (33%).

The GPs in class 3 reported 'illness in their clinics' (65%) 'collaboration problems' in their clinics (65%), 'patient's complaints' (60%), or 'generational transition' in their clinics (57%), 'no network' when on courses (54%), and 'personal reasons' (51%) which include illness by the GP himself or herself, more often than the two other classes.

As showed in Table 2, respondents' perceived barriers vary significantly ($p < 0.05$) across the three groups in 13 of 18 barriers.

[Table 2 around here.]

Covariates

The responding GPs had similar sex, age, seniority as GPs, distribution of practice types, and distribution of practice owners and employed GPs between the classes.

The distribution of covariates across participants answering strongly agree and agree to barriers are demonstrated in Table 3.

[Tabel 3 around here]

Discussion

Summary

In this cross-sectional questionnaire study, uncovering GPs' perceived barriers to CME, the most frequently reported barrier was 'being too busy with everyday work'. All GPs reported several barriers. Combinations of selected barriers revealed three possible profiles of GPs perceiving barriers for participating in CME:

- GPs who had no tradition for CME and might need enhanced motivation
- GPs who used time on professional work outside clinic (teaching, organizational work)
- GPs who were personally or professionally affected

Patient complaints were reported more frequently as a barrier among the GPs who were personally or professionally affected. However, it does not necessarily imply that GPs in this subgroup receive more patient complaints. A complaint can have a negative psychological impact and may reduce GPs' motivation for CME.

Male GPs and GPs in singled-handed practices were overrepresented among seldom users of CME.

Strengths and limitations

All GPs in Denmark were invited to the questionnaire survey. The response-rate of 40 percent was comparable to other survey studies on GPs (21, 22) but could entail selection bias. However, the study population reflected the total GP population except for a larger proportion of female GPs (68% versus 60%). This might underestimate barriers as female GPs were overrepresented among "frequent users" of CME. However, the number of "seldom users" in our study was in line with or above earlier studies (16).

We used qualitative interviews to identify possible barriers to CME. It is a strength that the questionnaire was based on barriers defined by GPs who had deselected CME in a 2-year period (16).

Using self-reported data can be a limitation if GPs are less likely to report themselves as "seldom users" but the rate of respondents classifying themselves as "seldom users" was in line with the proportion of GPs who were not using their reimbursement in the annual report from Association of General Practitioners (12).

Comparison with existing literature

Studies from Portugal and Ireland (13-15) found 'lack of time' as a main barrier, which corresponds to our finding of 'being too busy' as the most frequently reported barrier. Similarly, to the Irish studies (14, 15), we found problems with locum-cover as a frequent barrier.

'Lack of quality of CME' and 'technical difficulties' were seldom reported in Denmark which differed from the Irish studies (14, 15) whereas 'lack of relevant themes' was recognised in both countries. 'Overbooked courses' was the second most reported barrier in Denmark but to our knowledge overbooked courses are not described in other studies. Financial costs were not relevant in our study because we investigated barriers among GPs who had not used all their reimbursement.

In a former study (16), we found that all GPs stated, 'too busy', but all GPs were able to point out other barriers that could explain their experience of being too busy. The barriers behind 'too busy' could be divided into three categories: barriers related to the clinic, barriers related to the CME, and personal related barriers. In the actual study barriers related to CME and barriers related to the clinic were reported more often than barriers related to the individual GP. However, in our latent class analysis, we identified a class where GPs reported 'personal reasons' significantly more often. In this class, GPs expressed a higher level of being too busy compared to the other two classes. This suggests that the GP with barriers related to personal issues to a higher degree perceive themselves as overwhelmed by their workload.

We found no previous studies of underlying patterns in respondents' barrier-related responses among GPs.

We found male GPs and GPs in singled handed practices slightly overrepresented among "seldom users." A report from 2022 showed similar findings (12).

Implications for research and practice

Our study highlights potentials for CME organizers and health authorities. Focus on accessibility to relevant CME-activities will probably support recruitment to CME.

A course set-up made more compliant to busy workdays, may ease the need for substitutes. Facilitation of workplace learning, 'learning from each other', can strengthen an existing tradition.

It can be appropriate with awareness of:

- Newly established GPs and ongoing retirement may result in temporary deselection of CME.
- GPs lacking a professional network may deselect CME.

- GPs struggling with work overload or/and social challenge may need support different from traditional CME activities.
- A knowledge of profiles of GPs perceiving barriers for CME can be used to target CME to the GPs who are currently deselecting CME.

Further research in preferred educational set-up, in attitudes to CME, and how to enhance GPs' intrinsic professional motivation could be of interest. Additionally, there is a need to monitor barriers in future CME evaluations.

Conclusion

We have identified barriers for CME. Some can easily be addressed while other will be far more complex to overcome. We found three different profiles of GPs who perceived different patterns of barriers: GPs who has no tradition for CME and may need enhanced motivation, GPs who use time on professional work outside clinic (teaching, organisational work) GPs who are personally or professionally affected. The patterns in barriers should be considered in future CME initiatives.

Additional information

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Ethical approval:

All methods were conducted in accordance with relevant guidelines and regulations. The project has been ethically approved by SDU (University of Southern Denmark) Research and Innovation Organisation, RIO (record number 11.659). The National Scientific Ethical Committee has been asked (record number 20222000-47) but according to the Danish legislation (Scientific Ethical Committees Act § 14/1 + 2)) the project needs no approval from the National Scientific Ethical Committee.

Competing interests: No competing interests.

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Figure titles:

Figure 1: Flow chart of study population.

Figure 2: Frequency of barriers for participation in continuous medical education (CME) among general practitioners who are not using all their reimbursement for CME (n = 726).

Figure 3: Barrier response probabilities reported by general practitioners with respect to the three latent classes.

Tables

Table 1 - Baseline Characteristics of all respondents stratified by use of continuous medical education.

	Frequent users (n = 536, 42.6%)	Partial users (n = 553, 43.8%)	Seldom users (n = 173, 13.7%)	Total (n = 1,262)
Sex				
Female	386 (72.3)	370 (66.9)	98 (56.7)	854 (67.8)
Male	148 (27.7)	183 (33.1)	75 (43.4)	406 (32.2)
Age in years, mean (SD)				
	51.9 (7.6)	51.3 (8.0)	52.1 (8.7)	51.7 (8.0)
Seniority as a general practitioner				
<5 years	91 (17.0)	103 (18.6)	34 (19.7)	228 (18.1)
5-15 years	229 (42.7)	268 (48.7)	86 (49.7)	583 (46.2)
15+ years	216 (40.3)	182 (32.9)	53 (30.6)	451 (35.7)
Practice type				
Shared practice	39 (7.3)	32 (5.8)	9 (5.2)	80 (6.3)
Partnership	410 (76.5)	408 (73.8)	95 (54.9)	913 (72.4)
Collaboration	33 (6.2)	45 (8.1)	12 (6.9)	90 (7.1)
Singled handed	54 (10.1)	68 (12.3)	57 (33.0)	179 (14.2)

The table include numbers (percentage) unless stated otherwise.

SD = standard deviation.

Table 2 - The comparison of barriers for continuous medical education across latent classes (N = 726).

	Class 1 n = 124 (17.1%)	Class 2 n = 310 (42.7%)	Class 3 n = 292 (40.2%)	P-values
Teaching	17 (20.0)	48 (56.5)	20 (23.5)	0.003
Organizational work	26 (21.1)	57 (46.3)	40 (32.5)	0.126
Other medical work	22 (15.3)	64 (44.4)	58 (40.3)	0.797
Recently established	25 (17.6)	53 (37.3)	64 (45.1)	0.307
Completely up to date	7 (5.9)	62 (52.1)	50 (42.0)	0.001
Patient complaint	3 (10.0)	9 (30.0)	18 (60.0)	0.097
Personal reasons	43 (24.0)	44 (24.6)	92 (51.4)	<0.001
Too busy	94 (19.2)	163 (33.3)	233 (47.6)	<0.001
Lack of tradition	109 (41.9)	30 (11.5)	121 (46.5)	<0.001
Illness in practice	20 (13.7)	31 (21.2)	95 (65.1)	<0.001
Generational transition	16 (15.0)	30 (28.0)	61 (57.0)	<0.001
Collaboration difficulties	5 (7.7)	18 (27.7)	42 (64.6)	<0.001
Lack of substitute	119 (25.7)	123 (26.5)	222 (47.8)	<0.001
No professional network	16 (12.5)	43 (33.6)	69 (53.9)	0.003
Learn from each other	30 (16.2)	68 (36.8)	87 (47.0)	0.049
Lack of relevant topic	34 (18.8)	68 (37.6)	79 (43.7)	0.235
Poor quality of CME	20 (24.1)	21 (25.3)	42 (50.6)	0.003
Fully booked CME	62 (19.0)	122 (37.4)	142 (43.6)	0.013

Data are N (%).

The p-values were computed from chi-square tests or Fisher's exact test when the frequency in one of the cells was less than 5. Significance levels $p < 0.05$ are marked in bold.

Table 3 - The covariate distribution across latent classes of situations where respondents answer strongly agree or agree to barriers regarding continuous medical education (CME).

	Class 1 (n = 124, 17.1%)	Class 2 (n = 310, 42.7%)	Class 3 (n = 292, 40.2%)	P-values
Sex				0.299
Women	82 (66.1)	190 (61.3)	196 (67.1)	
Men	42 (33.9)	120 (38.7)	96 (32.9)	
Age in years, mean (SD)	51.0 (7.9)	52.4 (8.4)	50.7 (8.0)	0.278
Users of CME				0.514
Partial users	97 (78.2)	240 (77.4)	216 (74.0)	
Seldom users	27 (21.8)	70 (22.6)	76 (26.0)	
Seniority as a general practitioner				0.630
<5 years	23 (18.6)	55 (17.7)	59 (20.2)	
5-15 years	63 (50.8)	145 (46.8)	146 (50.0)	
16+ years	38 (30.7)	110 (35.5)	87 (29.8)	
Practice ownership				0.664
Owner	121 (97.6)	303 (97.7)	288 (98.6)	
Employed	3 (2.4)	7 (2.3)	4 (1.4)	
Practice type				0.150
Shared practice	8 (6.5)	21 (6.8)	12 (4.1)	
Partnership	82 (66.1)	201 (64.8)	220 (75.3)	
Collaboration	12 (9.7)	25 (8.1)	20 (6.9)	
Singled handed	22 (17.7)	63 (20.3)	40 (13.7)	

Data are N (%) unless stated otherwise.

SD = standard deviation.

The p-values were computed from chi-square tests or Fisher's exact test when the frequency in one of the cells was less than 5.