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Job satisfaction of family physicians in European countries with different strengths of care coordination

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Summary **Background.** Job satisfaction of family physicians (FPs) is vitally important not only for the well-being of physicians but also for the quality of health services. Coordination of care is one of the core dimensions of strong primary care. However, studies focused on the association between care coordination and the job satisfaction of FPs is scarce.
Objectives. To explore whether the factors influencing the job satisfaction of FPs differ in countries with different strengths of coordination.
Material and methods. A cross-sectional study was conducted among FPs in ten European countries which were divided into three groups in terms of care coordination. An online questionnaire was disseminated by e-mail to groups of FPs. Socio-demographic, working conditions and workload features were included as independent variables. Job satisfaction as the outcome variable was measured with one question. The Chi-square test was used for comparative analysis.
Results. 278 FPs (72% of the targeted sample size) participated. The job satisfaction of FPs in strong and medium-level care coordination groups was higher than their counterparts in the weak-level care coordination group ($p < 0.001$). No association was found between the socio-demographics and workload features with job satisfaction. Only the non-existence of a gate-keeping system was associated with the increased job satisfaction of FPs in the medium-level care coordination group ($p = 0.01$).
Conclusions. Primary health care is responsible for the coordination of care within the gigantic healthcare system, and FPs play a role in guiding patients. Studying the association between care coordination and the job satisfaction of FPs might help to build better healthcare systems. The gate-keeping system deserves special attention in this research area.
Key words: primary health care, job satisfaction, family physicians.

Background

The concept of job satisfaction was first defined in the 1920s as the amount of pleasure a person feels doing his/her job, as well as the sum of positive and negative attitudes towards the job [1]. The job satisfaction of healthcare providers is vitally important not only for the mental health and well-being of physicians but also for prescribing behaviours, patient compliance, patient satisfaction, health workforce, the morale of other healthcare workers, continuity of care, quality of health services and cost-effective service delivery [2, 3]. A study was carried out among Danish general practitioners (GPs) showed co-occurrences of poor general well-being and low job satisfaction [4]. Concerning the workforce, a cross-sectional UK study among GPs highlighted that the intention to leave work within two years was associated with low job satisfaction [5]. Previous studies showed that the job satisfaction of family physicians is increased by clinical variety [1, 6], being involved in medical students' education [1, 7] and academic activities; [1] however, it is decreased by administrative workload [1, 2, 6, 8], not having enough time for social/family life [1, 2, 9], poorly defined tasks, increased demands and unrealistic expectations [1, 6, 9].

The coordination of health services is defined as the deliberate organisation of patient care activities between two or more participants involved in a patient's care to facilitate the appropriate delivery of healthcare services [10]. To evaluate coordination of care, some key features have been introduced,

and the purpose of coordination of care has been defined as to facilitate taking the appropriate care in the appropriate time, in the correct order and at the correct place [11–13]. Care coordination can be analysed from different perspectives. One of the accepted concepts relates to the flow of care which refers to the vertical coordination that occurs between the different levels of care and horizontal coordination that takes place with the same level of care within primary care or specialised care [14]. Because care coordination is a complex issue with a harmonious connection of different health services, one of the most widespread ways to study it is to divide it into three types: clinical information coordination (transfer and use of information), clinical management coordination (care consistency, follow-up across care levels, accessibility across care levels), administrative coordination (patient referral centre, emergency management centre, informal communication processes) [14–17]. Family physicians (FPs), who are primarily responsible for primary healthcare service delivery in many countries of the world, play a major role as coordinator in today's fragmented and hyperspecialised health system. FPs understand the coordination of care as a 'process of communication, organisation and operation of network services, which guarantees continuity and integrality of care, improves access and use of services and reduces health inequalities' [18]. Coordination of care is assumed as an expanded responsibility of primary health care, and FPs perceive themselves as the appropriate person to coordinate patient care [19]. Strong primary care was defined to consist of seven core dimensions at the structure and process level in an inter-

national evaluation tool called Primary Care Monitor for Europe (PHAMEU) – a project supported by the European Commission. In this project, the dimensions of the structure were categorised as governance, economic conditions and workforce development; the dimensions of the process were categorised as accessibility, continuity, comprehensiveness and coordination. Coordination of care was measured by seven indicators related to the gate-keeping system, skill-mix of primary care providers, the collaboration of health care levels and integration with public health [20]. The PHAMEU project continued with an international comparative study in 2009–2010 which evaluated and compared 31 European countries in terms of structure and process of primary care and resulted in categorising these countries at a strong, medium and weak level. How primary care physicians refer their patients to upper levels of care was found to be the most significant feature of strong health care coordination [21].

Studies showed that coordination between levels of care provides better management of chronic diseases and mental health problems, reduces the occupational isolation of FPs [22–24], prevents a defensive medicine tendency [25], supports the clinical competence of FPs and reduces the feeling of incompetence at work and job stress [24, 26–29] through the exchange of information, life-long learning opportunities and shared responsibilities. However, studies focused on the association between care coordination and job satisfaction of FPs are scarce. Existing literature reveals different results about the association between care coordination and physicians' job satisfaction. In a cross-sectional study conducted in six Latin American countries, researchers analysed doctors' experiences of care coordination across levels and found that better general perception of care coordination is associated with job satisfaction, being a secondary care doctor and identifying the primary care doctor as a care coordinator [30]. A similar study in Spain showed that in the specific case of primary care doctors, being satisfied with their job was found to be associated with perceiving high coordination [15]. Care coordination is a critical component of high-risk patients due to number and diversity of their needs, and in the USA, patient-centred medical homes were designed to improve care coordination and reduce care fragmentation in 2010. A study to evaluate the relationship between provider stress and care coordination time in high-risk patient care showed that an increase in the number of high-risk patients in an FP's patient list may impose a significant burden in terms of time spent coordinating care, which in turn was associated with increased provider stress [31]. When it comes to horizontal coordination, according to one study conducted in Wisconsin, professional communication networks – which are related to clinical information coordination – increases the overall job satisfaction of staff in primary care clinics [32].

Objectives

This study aims to explore whether the factors influencing the job satisfaction of family physicians differ in countries with different strengths of care coordination levels.

Material and methods

Study design

This is a cross-sectional study. The target population of the study consisted of FPs working in European countries. Firstly, we clustered 31 countries into three groups which had already been described as having strong, medium and weak levels in terms of care coordination, according to the PHAMEU studies of Dionne S. Kringos et al. [20, 21]. After this clustering, we listed the countries in each group according to the total populations. Due to capacity and resource shortage of the research group, sampling

was made as follows: The top three countries with the highest population in all three clusters were planned to be recruited. In case of not being able to find a contact person in a country to collect the data, selection continued with the next country on the list (Table 1). Turkey was also included to gather the national data. Turkey's care coordination level was classified as weak [21]. The sample size was calculated as 384 physicians in 10 countries, with a 5% error margin and a 95% confidence interval.

Table 1. Target population of the study and selected countries*

Strong level	Medium level	Weak level
The United Kingdom[#]	France[#]	Germany[#]
Spain[#]	Italy[#]	Romania[#]
Poland[**]	Belgium[**]	Hungary[#]
The Netherlands[#]	Czech Republic[**]	Austria
Greece	Portugal[#]	Bulgaria
Sweden	Switzerland	Slovakia
Denmark	Finland	Norway
Lithuanian	Latvia	Ireland
Slovenia	Estonia	Cyprus
Malta	Luxembourg	Turkey

* Clustering was based on the results of another study [21], and countries were ranked in descending order according to the 2017 census, ** In case of not being able to find a contact person in a country to collect data, the selection continued with the next one on the list, [#] Selected countries.

Recruitment of the participants

A convenient sampling method was used to recruit the physicians from the countries clustered according to their care coordination levels. An online questionnaire was disseminated by e-mail to groups of the European Young Doctors' Movement (VdGM) and European General Practice Research Network (EGPRN) who the help of the contact physicians who were informed about the study and the recruitment process and who would disseminate the online questionnaire. The participants of the study were the volunteering members of these e-mail groups who completed the questionnaire. A reminder e-mail was sent to the groups of family physicians every two months. In total, five reminder e-mails were sent for France, Italy, Portugal and Turkey, while more reminders were sent to the countries where the survey was poorly answered (seven reminders for Spain, the Netherlands, Romania and Hungary; ten reminders for the UK and Germany).

Development of the questionnaire

A systematic literature review was completed to identify the factors affecting job satisfaction. Based on relevant literature, a questionnaire in English was developed by the researchers. A draft questionnaire was sent to ten physicians (one from each country) and reviewed through feedback.

Variables

Independent variables

In the questionnaire, independent variables were grouped into three parts: socio-demographic characteristics, working conditions and workload features. Socio-demographic characteristics included age, gender, marital status and duration of practicing medicine as a family physician. Working conditions included practice type, workplace, type of employment and existence of a gate-keeping system (gate-keeping is a term used to describe the role of primary care physicians or general practitioners in authorising access to speciality care, hospital care and diagnostic tests) [33]. Workload features included the number of

registered patients, weekly working hours, number of patients seen in the office per day, number of patients visited at home per day, number of patients reached via phone/e-mail per day and number of referrals per week.

Dependent variable

Job satisfaction, which was the dependent variable of the study, was determined by using one question: 'Taking into account all possible aspects of your work, how satisfied are you with your job?', which could be answered on a 5-point Likert scale, with 1 meaning extremely satisfied and 5 extremely dissatisfied. This type of measurement of overall job satisfaction with one single question was used in previous studies [7, 8, 22, 34].

To be able to perform comparative analyses, certain variables were dichotomised: a) concerning the practice type, 'solo' practice was differentiated from other types of 'group' practices, b) participants' workplaces were divided into two groups – city area and rural area. City area consisted of the city centre and urban area, c) 'satisfied' and 'extremely satisfied'; 'dissatisfied', 'neutral' and 'extremely dissatisfied' responses to the outcome variable were combined under the captions of 'satisfied' and 'dissatisfied', respectively. 'Neutral' meant the feeling of neither being satisfied nor dissatisfied but accepting the current situation with no intention to change it.

Statistical analyses

Data was collected between August 2017–May 2018. Online questionnaires that had been completely answered were included in the analysis. The SPSS.20.00 program was used for statistical analyses. To describe continuous variables with normal distribution, arithmetic mean and standard deviation were given; if not normally distributed, then median values and range of distribution (min and max values) were given. Frequencies as percent values were used to define the nominal and ordinal variables. In comparative analyses, the Chi-square test was used. If the minimum expected value was < 5, Fisher's exact test was used; if not, Yates Continuity Correction results were taken into account. $P < 0.05$ was considered as statistically significant.

Ethical review

The study was approved by the Marmara University School of Medicine Clinical Research Ethical Board (Approval code: 09.2017.578).

Informed consent

An invitation letter which provided information about the aim and method of the study was sent along with the questionnaire. It also included information about the confidentiality of personal data and asked for the consent of the participants.

Results

Descriptive features

Since the questionnaire was disseminated by e-mail groups, a response rate could not be calculated. A total of 278 family physicians (72% of the targeted sample size) from ten countries in three clusters participated in the study. Of the participants, 42.4% ($n = 118$) were from countries with a medium care coordination level, 34.2% ($n = 95$) were from countries with a weak care coordination level, 23.4% ($n = 65$) were from countries with a strong care coordination level. As a whole, 54% were women, and 73.4% were married. The mean age was 45.01 (SD = 12.6), and the median year of the duration of practising medicine as a family physician was 8 years (min: 0.5 – max: 42). The average number of usual referrals per week was less than 10 for 62.9% of the participants. Of the participants, 85.3% reported they have been working in a system where FPs act as gate-keepers of health care. Responses to the job satisfaction question were as follows: 9.4% were extremely satisfied, 58.2% were satisfied, 14.8% were neutral, 15.8% were dissatisfied, and 1.8% were extremely dissatisfied. Detailed descriptive statistics in terms of countries can be seen in the additional file.

Comparative analysis

Bivariable analysis of the data according to care coordination level showed that the studied socio-demographic characteristics (Table 2) and workload features (Table 3) did not have a statistically significant impact on the job satisfaction of participants in the three clusters of countries. Only non-existence of a gate-keeping system was associated with increased job satisfaction in the medium level care coordination group ($p = 0.01$) (Table 4). Percentages of family physicians satisfied with their job were 84.6%, 77.1% and 44.2% in countries with strong, medium and weak care coordination levels, respectively. The job satisfaction of family physicians in strong and medium levels care coordination groups was higher than their counterparts in the weak level care coordination group ($p < 0.001$) (Figure 1).
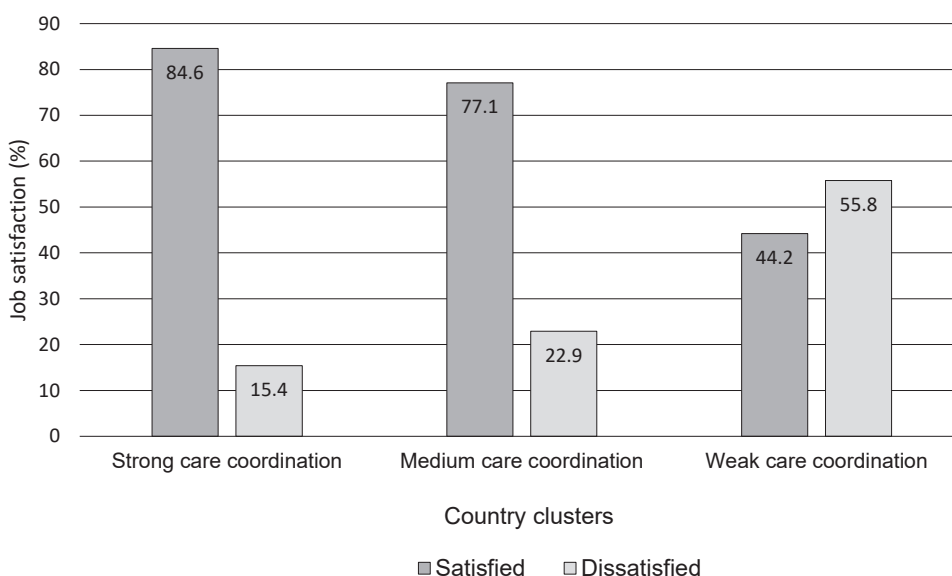

Figure 1. Bivariable analyses of job satisfaction

Table 2. Bivariable analyses of socio-demographic characteristics

Coordination level	Strong			Medium			Weak		
Job satisfaction	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^
Age < 45	33 (82.5)	7 (17.5)	40 (61.5)	45 (70.3)	19 (29.7)	64 (54.2)	19 (37.3)	32 (62.7)	51 (53.7)
≥ 45	22 (88.0)	3 (12.0)	25 (38.5)	46 (85.2)	8 (14.8)	54 (45.8)	23 (52.3)	21 (47.7)	44 (46.3)
	$X^2 = 0.368$#	$p = 0.54$#		$X^2 = 2.877$	$p = 0.09$		$X^2 = 1.594$	$p = 0.20$	
Gender female	29 (82.9)	6 (17.1)	35 (53.8)	50 (76.9)	15 (23.1)	65 (55.1)	18 (36.0)	32 (64.0)	50 (52.6)
male	26 (86.7)	4 (13.3)	30 (46.2)	41 (77.4)	12 (22.6)	53 (44.9)	24 (53.3)	21 (46.7)	45 (47.4)
	$X^2 = 0.181$#	$p = 0.67$#		$X^2 = 0.00$	$p = 1.00$		$X^2 = 2.225$	$p = 0.13$	
Marital status married	38 (82.6)	8 (17.4)	46 (70.8)	68 (78.2)	19 (21.8)	87 (73.7)	36 (50.7)	35 (49.3)	71 (74.7)
single	17 (89.5)	2 (10.5)	19 (29.2)	23 (74.2)	8 (25.8)	31 (26.3)	6 (25.0)	18 (75.0)	24 (25.3)
	$X^2 = 0.518$#	$p = 0.47$#		$X^2 = 0.041$	$p = 0.83$		$X^2 = 3.819$	$p = 0.05$	
Dur. Med.& < 10	25 (78.1)	7 (21.9)	32 (49.2)	44 (69.8)	19 (30.2)	63 (53.4)	17 (34.0)	33 (66.0)	50 (52.6)
≥10	30 (90.9)	3 (9.1)	33 (50.8)	47 (85.5)	8 (14.5)	55 (46.6)	25 (55.6)	20 (44.4)	45 (47.4)
	$X^2 = 2.085$#	$p = 0.14$#		$X^2 = 3.220$	$p = 0.07$		$X^2 = 3.631$	$p = 0.05$	
Total	**55 (84.6)**	**10 (15.4)**	**65 (100)**	**91 (77.1)**	**27 (22.9)**	**118 (100)**	**42 (44.2)**	**53 (55.8)**	**95 (100)**

* Number and percentage of row, ^ Number and percentage of column, # Results of Fischer's Exact Test, & Duration of practicing medicine as a family physician.

Table 3. Bivariable analyses of workload features

Coordination level	Strong			Medium			Weak		
Job satisfaction	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^
No.## of registered patients < 1600	24 (88.9)	3 (11.1)	27 (41.5)	61 (81.3)	14 (18.7)	75 (63.6)	15 (51.7)	14 (48.3)	29 (30.5)
≥ 1600	31 (81.6)	7 (18.4)	38 (58.5)	30 (69.8)	13 (30.2)	43 (36.4)	27 (40.9)	39 (59.1)	66 (69.5)
	$X^2 = 0.668$#	$p = 0.41$#		$X^2 = 1.468$	$p = 0.22$		$p = 0.226$	$X^2 = 0.56$	
Weekly working hours < 40	32 (82.1)	7 (17.9)	39 (60)	41 (78.8)	11 (21.2)	52 (44.1)	13 (40.6)	19 (59.4)	32 (33.7)
≥ 40	23 (88.5)	3 (11.5)	26 (40)	50 (75.8)	16 (24.2)	66 (55.9)	29 (46.0)	34 (54.0)	63 (60.3)
	$X^2 = 0.507$#	$p = 0.47$#		$X^2 = 0.031$	$p = 0.86$		$X^2 = 0.080$	$p = 0.77$	
No. of pat. seen in office < 30	16 (72.7)	6 (27.3)	22 (33.8)	60 (74.1)	21 (25.9)	81 (68.7)	7 (30.4)	16 (69.6)	23 (24.2)
≥ 30	39 (90.7)	4 (9.3)	43 (66.2)	31 (83.8)	6 (16.2)	37 (31.3)	35 (48.6)	37 (51.4)	72 (75.8)
	$X^2 = 3.415$#	$p = 0.06$#		$X^2 = 0.863$	$p = 0.35$		$X^2 = 1.656$	$p = 0.19$	
No. of pat. visited at home < 2	25 (86.2)	4 (13.8)	29 (44.6)	39 (72.2)	15 (27.8)	54 (45.8)	18 (36.7)	31 (63.3)	49 (51.6)
≥ 2	30 (83.3)	6 (16.7)	36 (50.4)	52 (81.2)	12 (18.8)	64 (54.2)	24 (52.2)	22 (47.8)	46 (48.4)
	$X^2 = 0.103$#	$p = 0.74$#		$X^2 = 0.889$	$p = 0.34$		$X^2 = 1.710$	$p = 0.19$	
No. of pat. reached via phone < 5	22 (88.0)	3 (12.0)	25 (38.5)	37 (71.2)	15 (28.8)	52 (44.1)	15 (35.7)	27 (64.3)	42 (44.2)
≥ 5	33 (82.5)	7 (17.5)	40 (61.5)	54 (81.8)	12 (18.2)	66 (55.9)	27 (50.9)	26 (49.1)	53 (50.8)
	$X^2 = 0.368$#	$p = 0.54$#		$X^2 = 1.319$	$p = 0.25$		$X^2 = 1.629$	$p = 0.20$	
No. of referrals per week < 10	40 (85.1)	7 (14.9)	47 (72.3)	61 (77.2)	18 (22.8)	79 (66.9)	20 (40.8)	29 (59.2)	49 (51.6)
≥ 10	15 (83.3)	3 (16.7)	18 (27.7)	30 (76.9)	9 (23.1)	39 (31.1)	22 (47.8)	24 (52.2)	46 (48.4)
	$X^2 = 0.031$#	$p = 0.86$#		$X^2 = 0.000$	$p = 1.00$		$X^2 = 0.231$	$p = 0.63$	
Total	**55 (84.6)**	**10 (15.4)**	**65 (100)**	**91 (77.1)**	**27 (22.9)**	**118 (100)**	**42 (44.2)**	**53 (55.8)**	**95 (100)**

* Number and percentage of row, ^ Number and percentage of column, # Results of Fischer's Exact Test, & Duration of practicing medicine as a family physician.

Coordination level	Strong			Medium			Weak		
Job satisfaction	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^	Satisfied n (%)*	Dissatisfied n (%)*	Total n (%)^
Practice type solo	2 (66.7)	1 (33.3)	3 (4.6)	13 (86.7)	2 (13.3)	15 (12.7)	29 (49.2)	30 (50.8)	59 (62.1)
group	53 (85.5)	9 (14.5)	62 (95.4)	78 (75.7)	25 (24.3)	103 (87.3)	13 (36.1)	23 (63.9)	36 (37.9)
	$X^2 = 0.629^{\#}$	$p = 0.42^{\#}$		$X^2 = 0.986^{\#}$	$p = 0.32^{\#}$		$X^2 = 1.058$	$p = 0.30$	
Workplace city	41 (83.7)	8 (16.3)	49 (75.4)	63 (75.9)	20 (24.1)	83 (70.3)	29 (43.9)	37 (56.1)	66 (69.5)
rural	14 (87.5)	2 (12.5)	16 (24.6)	28 (80.0)	7 (20.0)	35 (29.7)	13 (44.8)	16 (55.2)	29 (30.5)
	$X^2 = 0.141^{\#}$	$p = 0.70^{\#}$		$X^2 = 0.060$	$p = 0.80$		$X^2 = 0.000$	$p = 1.00$	
Type of employ state	27 (79.4)	7 (20.6)	34 (51.8)	67 (75.3)	22 (24.7)	89 (75.4)	21 (38.2)	34 (61.8)	55 (57.9)
self	28 (90.3)	3 (9.7)	32 (49.2)	24 (82.8)	5 (17.2)	29 (24.6)	21 (52.5)	19 (47.5)	40 (42.1)
	$X^2 = 1.525^{\#}$	$p = 0.21^{\#}$		$X^2 = 0.334$	$p = 0.56$		$X^2 = 1.388$	$p = 0.23$	
Gate-keeping yes	55 (84.6)	10 (15.4)	65 (100)	79 (74.5)	27 (25.5)	106 (89.8)	33 (50.0)	33 (50.0)	66 (69.5)
no	0 (0.0)	0 (0.0)		12 (100.0)	0 (0.0)	12 (10.2)	9 (31.0)	20 (69.0)	29 (30.5)
				$X^2 = 6.629^{\#}$	$p = 0.01^{\#}$		$X^2 = 2.220$	$p = 0.13$	
Total	**55 (84.6)**	**10 (15.4)**	**65 (100)**	**91 (77.1)**	**27 (22.9)**	**118 (100)**	**42 (44.2)**	**53 (55.8)**	**95 (100)**

Table 4. Bivariable analyses of working conditions

* Number and percentage of row, ^ Number and percentage of column, # Results of Fischer's Exact Test, & Duration of practicing medicine as a family physician.

Discussion

Main findings

The job satisfaction of family physicians in strong and medium level care coordination groups was higher than their counterparts in the weak level care coordination group. The studied socio-demographic characteristics and workload features did not have a statistically significant impact on the job satisfaction of participants in the three clusters of countries. It was found that the non-existence of a gate-keeping system among the studied working conditions was associated with the increased job satisfaction of FPs in the medium level care coordination group.

Interpretation of the study

More than three fourths of the FPs in countries with strong and medium level care coordination groups were satisfied with their job, and it was less than half in the weak level care coordination group. This difference was statistically significant. To the best of our knowledge, there is no other study on the association between countries' overall care coordination level and FPs' job satisfaction. Care coordination is an umbrella term which consists of subheadings such as the gate-keeping system, skill-mix of providers, cooperation with primary care team, collaboration with secondary care, specialist outreach and integration of public health. It can be interpreted as clarifying the association between these themes and FPs' job satisfaction in countries with a weak level of care coordination and might help to build a better primary health care system. Existing literature contributes to this finding from a different perspective; one study conducted in six Latin American countries and another in Spain revealed that the job satisfaction of FPs influences the general perception of care coordination [14, 15]. Due to the fact that care coordination is vitally important for high-risk and multimorbid patients, one study in the USA highlighted the association between burden of care coordination and FPs' work stress [31]. Amongst the studied working conditions, the non-existence of a gate-keeping system was found to be associated with greater job satisfaction in the medium level care coordination group. In published literature, there is limited data about the relationship between gate-keeping and the job satisfaction of FPs. In line

with our result, a study by Sanchez Piedra et. al which compared family physicians' job satisfaction in seven countries in 2017 established the negative effect of the gate-keeping function on the job satisfaction of FPs and concluded that more open, less rigid and less controlled primary care services could lead to better results regarding FPs' job satisfaction [34]. However, a recent study conducted in 34 European countries focused on communication between GPs and medical specialists in the referral process – which is one of the themes of care coordination – and found that GPs in countries with a gate-keeping system reported higher rates of referral letters sent to and feedback communication taken from specialists, which were associated with greater job satisfaction [35]. In our study, all participants from the strong level care coordination group stated to be working as gate-keepers of the health care system; thus, it was not possible to evaluate the existence of a gate-keeping system on job satisfaction in this group. Whereas in the countries with a weak level of care coordination, nearly 70% of the participants were gate-keepers of the health care system, and amongst non-gate-keepers (30%), dissatisfied FPs were higher than those satisfied, although this was not statistically significant. Putting a gate-keeping system into practice is a controversial issue, and debates around its advantages and disadvantages concerning patients' and providers' satisfaction, healthcare costs and clinical outcomes are ongoing [36, 37].

Strengths

In literature, there is limited research focused on the association between coordination of health care and FPs' job satisfaction. Our study is the first international study carried out in this research area. Thanks to the participants from ten different countries, the data is rich enough to reflect the experiences and opinions of physicians working in different healthcare systems.

Limitations of the study

The participating countries were selected based on the population size (top three population sizes in each cluster), and stratified sampling was not applied. As the data was collected anonymously through e-mail groups, the response rate could not be calculated. In total, 72% of the targeted sample size was reached.

The questionnaire was also disseminated through international special interest groups (VdGM, EGPRN) of family physicians, and the study questionnaire was prepared in English and

was not translated into each participating country's formal language. Thus, our results cannot be generalised. They should be carefully evaluated because of possible selection bias and because the participants were all English-speaking FPs.

We used a single question to evaluate job satisfaction instead of a scale that should have been translated and validated in ten different languages. As described in various studies [7, 8, 22, 34], a one-question evaluation gives a general idea about job satisfaction but does not provide information about different aspects of job satisfaction. However, using a single and clear question might have avoided the language barrier and might have increased the response rate due to the shorter time needed to fill in the questionnaire.

Conclusions

In a world where the population is getting older, chronic diseases are increasing, and the number of individuals with special needs is multiplying, the organisation of the healthcare system and the effective delivery of services is gaining more importance. Primary health care is responsible for the coordination of care within this complex and gigantic healthcare system, and FPs play a role in guiding patients. However, it is not clear how this multitasking responsibility affects family physicians and their job satisfaction. The current study may shed some light on this topic. In our study population, the job satisfaction of family physicians in strong and medium level care coordination groups was higher than their counterparts in the weak level care coordination group. Studying the association between intra- and inter-organisational coordination in primary care [38] and FPs' job satisfaction might help to build better healthcare systems. We found that the non-existence of a gate-keeping system was associated with the increased job satisfaction of FPs in the medium level care coordination group. Therefore, it seems that a gate-keeping system which has various applications in Europe (e.g. partial gate-keeping system in Estonia [39]) deserves special attention in this research area.

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