



Needs and gaps of faculty development for medical schools

Ji Hyun Im^{1,2}, Wha Sun Kang^{1,3}, Seung Hee Lee², Dae Chul Jeong⁴, Dae Hyun Kim⁵, Man-Sup Lim⁶, Miran Kim^{7,8}, Ji-Hyun Seo⁹ and Dong Hyeon Lee^{10,11}

¹SLICE Center for Faculty Development, College of Medicine, The Catholic University of Korea, ²Department of Medical Education, Seoul National University College of Medicine, ³Development of Medical Life Sciences and ⁴Department of Pediatrics, College of Medicine, The Catholic University of Korea, Seoul, ⁵Department of Family Medicine, Keimyung University School of Medicine, Daegu, ⁶Department of Medical Education, Hallym University College of Medicine, Chuncheon, Departments of ⁷Obstetrics and Gynecology and ⁸Medical Education, Ajou University School of Medicine, Suwon, ⁹Department of Pediatrics and Medical Education, Gyeongsang Institute of Medical Science, Gyeongsang National University School of Medicine, Jinju, ¹⁰Department of Physiology, CHA University School of Medicine, Pocheon, and ¹¹CHA Institute for Future Medicine, Medical Center Research Institute, Seongnam, Korea

Purpose: Current faculty development (FD) programs are mostly limited to medical education and often lack a comprehensive and systematic structure. Therefore, the present study aimed to explore the current status and needs of FD programs in medical schools to provide a basis for establishing FD strategies.

Methods: We conducted an online survey of medical school FD staff and professors regarding FD. Frequency, regression, and qualitative content analyses were conducted. FD programs were categorized into the classification frameworks.

Results: A total of 17 FD staff and 256 professors at 37 medical schools participated. There are gaps between the internal and external FD programs offered by medical schools and their needs, and there are gaps between the programs the professors participated in and their needs. Recent internal and external FD programs in medical schools have focused on educational methods, student assessment, and education in general. Medical schools have a high need for leadership and self-development, and student assessment. Furthermore, professors have a high need for leadership and self-development, and research. The number of participants, topics, and needs of FD programs varied depending on the characteristics of individual professors.

Conclusion: Medical schools should expand their FD programs to meet the needs of individuals and the changing demands of modern medical education. The focus should be on comprehensive and responsive programs that cover various topics, levels, and methods. Tailored programs that consider professors' professional roles, career stages, and personal interests are essential for effective FD.

Key Words: Needs assessment, Faculty development, Faculty development program, Medical schools, Korea

Introduction

Professor plays a key role in the development and achievement of medical schools. Therefore, the impor-

tance of faculty development (FD) in medical schools is increasing. FD refers to activities that can improve the skills, knowledge, and effectiveness of professors in their roles. While FD has primarily addressed what it takes to be an educator, the concept has gradually expanded to

Received: March 19, 2024 • Revised: April 19, 2024 • Accepted: May 7, 2024
Corresponding Author: Dong Hyeon Lee (<https://orcid.org/0000-0003-0511-6910>)
Department of Physiology, CHA University School of Medicine, 120 Haeryong-ro, Pocheon 11160, Korea
Tel: +82.31.850.9323 Fax: +82.31.544.9274 email: leedh@cha.ac.kr

Korean J Med Educ 2024 Jun; 36(2): 189–201
<https://doi.org/10.3946/kjme.2024.295>
eISSN: 2005-7288

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include research, career, leadership, administration, and clinical practice [1]. Sheets and Schwenk [2] defined FD as any planned activity to improve an individual's knowledge and skills in areas considered to be essential to a faculty member's performance (teaching, administrative, research, and clinical skills).

The roles of a medical school professor include teaching, research, clinical practice, and service [3], with the first three being the three pillars of academic medicine [4]. Medical school professors have different emphasis on these roles depending on their specialty. Because of the high proportion of clinical professors in medical schools, the clinical role is gradually becoming the largest of the four roles, followed by research, teaching, and service [5]. To fulfill these roles, doctors are appropriately trained in research and clinical practice before becoming a professor. However, because of limited opportunities for teaching and the heavy demands of research and clinical practice, the proficiency level in teaching is relatively low [6]. This explains why teaching has been the primary focus of FD until recently.

In Korea, FD is mainly conducted by medical school programs and three major FD institutions (i.e., the National Teacher Training Center [NTTC] for Health Personnel at Seoul National University College of Medicine, Academy for Medical Education of the Korean Association of Medical Colleges [KAMC], and Korean Society of Medical Education [KSME]). The medical education accreditation standards also include FD standards for new and full-time professors, which have helped to regulate and promote FD. However, aside from the three major FD institutions, little is known about the themes, frequency, and types of programs offered in medical schools. According to a recent study, faculty members spent an average of 5.3 hours participating in medical education training and FD programs in medical schools every year, and the average number of faculty

members who participated in these programs every year was 234 [7]. Assessment and evaluation, educational methods, professor roles, curriculum design, and curriculum themes were the most common topics in these programs. The programs were primarily in the form of workshops or seminars [7].

Although medical schools continue to develop professors to improve education quality, manage professors' careers, improve professors' performance, and meet medical education accreditation standards, FD programs still need to be systematized comprehensively. Most programs are limited to topics related to medical education and accreditation. Medical education programs are detailed and specialized [7], but other roles of the professor, including administration and research, have not been given significant attention. Even when surveying professor need, it was limited to FD programs in medical education. A study of the need for FD programs in medical schools suggested strengthening the execution of instruction, evaluating the session, diagnosing students' class readiness, and providing class sessions with suitable levels and content [6]. In another study, diagnosis and reflection, test and feedback, and facilitation were identified as the most pressing needs of educators [8]. One study employed the CIPP evaluation model to evaluate and improve FD programs [9]. A recent systematic review of FD programs found that the types of FD programs were primarily workshops, short courses, and seminar series, with most programs focusing on the "faculty role" of information provider and coach, facilitator of learning and mentor, assessor, and diagnostician [10]. A focus group interview study with pediatric faculty identified barriers to FD opportunities and explored ways to improve them [11].

This study aimed to examine the current status and needs of FD programs in medical schools, FD institutions, or individual professors and to provide a foundation for proposing an FD strategy based on these needs. Depending

on the specialty, timing, audience, and educational level, some FD needs may be applicable to medical schools, whereas others may need to be adapted by FD institutions. Medical schools and FD institutions in Korea should mutually support each other to establish a comprehensive and standardized FD system by focusing on various customized programs, quality assurance, evaluation measures, and continuous professional improvement of professors.

Methods

1. Study design

An online survey was conducted by the KAMC via email in November 2021. The commercialized SurveyMonkey tool (SurveyMonkey Inc., San Mateo, USA) was used for the online survey, and the majority of respondents across the country were able to respond conveniently because they were easily accessible and readable.

2. Study subjects

The subjects were FD staff from 40 medical schools and 1,300 medical school professors who had participated in an FD program during the previous 3 years (2019-2021). The study's purpose was explained via email, and only those who agreed to participate in the study could respond to the questionnaire.

3. Survey tools

Seven medical education experts developed a questionnaire through a literature review to determine the current status in FD programs and needs. The survey questions for FD staff mainly comprised basic information, number of programs per year, FD programs conducted in the past 3 years, needs for FD program topics, and status

of the use of programs from external institutions. The survey questions for professors mainly consisted of basic information, number of participations by host institutions, program topics in which they have participated, and program topic needs.

4. Data analysis

For data analysis, the frequency and percentage of participants' general characteristics were first calculated. Second, three medical education experts created a classification framework based on previous research to conduct a content analysis of the FD program topics. The 10 major categories include education in general, curriculum themes, curriculum development and evaluation, educational methods, student assessment, student guidance and counseling, postgraduate medical education, research, service, and leadership and self-development. Topics that do not fall into these categories were categorized as unclassified. Third, regression analysis was conducted to analyze participation status and needs according to the personal characteristics of each professor. Statistical analyses were conducted using IBM SPSS ver. 28.0 software (IBM Corp., Armonk, USA), and statistical significance was considered at $p < 0.05$.

5. Ethics statement

This study was reviewed and approved by the Institutional Review Board of CHA University (approval no., 1044308-202109-HR-077-02).

Results

1. Medical school FD programs

FD representatives from 17 of the 40 medical schools responded to the survey to learn about the current status

and needs of internal and external FD programs at the organizational level. For internal medical school FD programs, 10 (58.8%) were run by the Department of Medical Education, 3 (17.6%) by a separate FD department, 3 (17.6%) by the Office of Medical Education, and 1 (5.9%)

by the general administration. Table 1 shows the major topics, methods of operation, duration, and participants in FD programs over the past 3 years according to the classification framework.

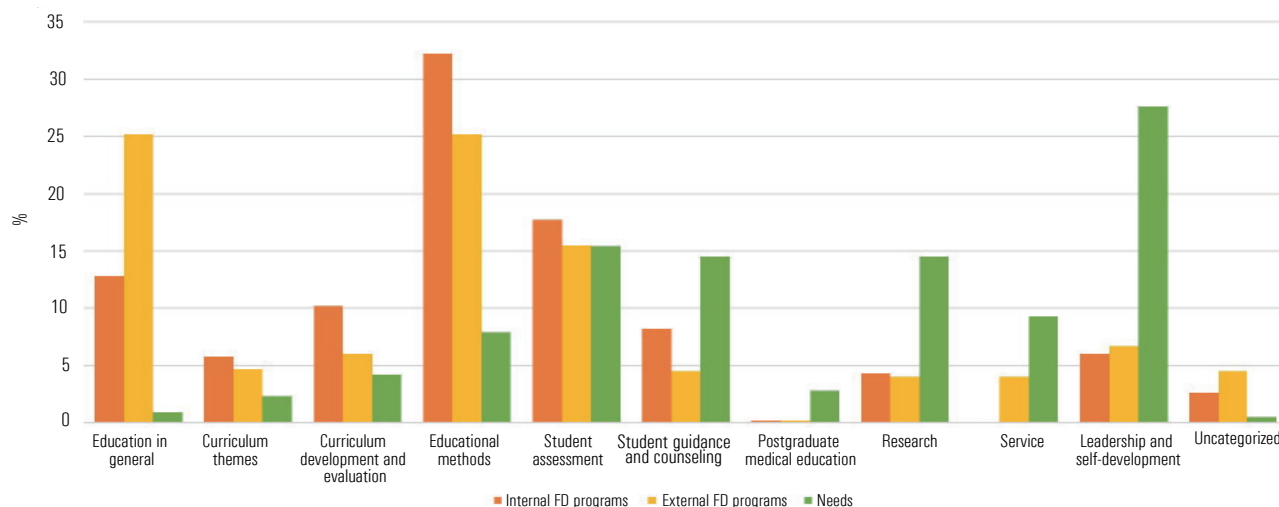
Among the FD programs provided by external in-

Table 1. Current Status of Faculty Development Programs in Medical Schools

Classification framework	Topic	Methods of operation	Duration	Participant
Education in general	New faculty workshop, medical education seminar, medical education training	Face-to-face	Within 2 days	General faculty, new faculty, specific region or branch hospital unit
Curriculum themes	Medical humanities, medical professionalism, future medicine	Face-to-face, non-face-to-face	Within 4 hours	General faculty
Curriculum development and evaluation	Curriculum development, curriculum evaluation, educational program evaluation	Face-to-face, non-face-to-face	Within 1 day	General Faculty, professors by job title
Educational methods	Course design, microteaching, teaching methods, clinical practice, non-face-to-face teaching methods, digital tools	Non-face-to-face	Within 4 hours	General faculty, department
Student assessment	Student assessment methods, question development, CPX/OSCE, portfolio	Face-to-face, non-face-to-face	Within 4 hours	General faculty, professors by job title, department
Student guidance and counseling	Student selection, cohort, mentoring	Face-to-face, non-face-to-face	Within 4 hours	General faculty, professors by job title
Postgraduate medical education	Graduate medical education	Non-face-to-face	Within 2 hours	General faculty
Research	Dissertation writing, English presentations, statistics	Face-to-face	Within 2 hours	General faculty
Service	None	-	-	-
Leadership and self-development	Leadership, understanding and managing higher education, liberal arts	Face-to-face, non-face-to-face	Within 2 hours	General faculty, leader
Uncategorized	Accreditation-related training	Face-to-face	Within 6 hours	General faculty

CPX: Clinical performance examination, OSCE: Objective structured clinical examination.

Fig. 1. Current Status and Needs for Internal and External FD Programs in Medical Schools



FD: Faculty development.

stitutions, the number of cases used by medical schools was 579. Of these, 196 (35.1%) were offered by the KSME, 183 (32.7%) by the NTTTC, 127 (22.7%) by the KAMC, 22 (3.9%) by the Korean Institute of Medical Education and Evaluation, 15 (2.7%) by the Korean Consortium for e-Learning in Medical Education, 8 (1.4%) by the Korea Health Personnel Licensing Examination Institute, and 8 (1.4%) by others. With regard to the number of participants by topic, education in general had the most participants (1,018, 49.7%), followed by curriculum themes (50, 2.4%), curriculum development and evaluation (94, 4.6%), educational methods (334, 16.3%), student assessment (293, 14.3%), student guidance and counseling (44, 2.1%), post-graduate medical education (5, 0.2%), research (50, 2.4%), services (29, 1.4%), leadership and self-development (63, 3.1%), and uncategorized (70, 3.4%).

Fig. 1 shows the frequency of current internal and external FD programs and future needs of medical schools. The content according to the classification framework confirmed a gap between the current status and needs.

2. Participation and needs of medical school professors

Two hundred and fifty-six medical school professors responded to an individual professor survey that examined their participation in FD programs and needs. General characteristics of all 256 survey respondents are provided in Appendix 1. The mean and standard deviation for the percentage of time devoted to clinical practice, teaching, research, and service were 40.76 ± 26.68 , 25.07 ± 15.41 , 24.56 ± 17.15 , and 12.30 ± 9.99 , respectively.

Fig. 2 shows the results of the frequency analysis of professors' participation in FD programs over the past 3 years and their need to participate in future programs. A gap was observed between current participation and needs based on content according to the classification framework.

Respondents' participation in FD programs and needs varied according to their general characteristics and the proportion of time devoted to clinical practice, teaching, research, and services. First, in terms of number of participations in programs, those in their 50s participated in fewer FD programs. Those with a higher percentage

Fig. 2. Participation and Needs for Faculty Development Programs of Medical School Professors

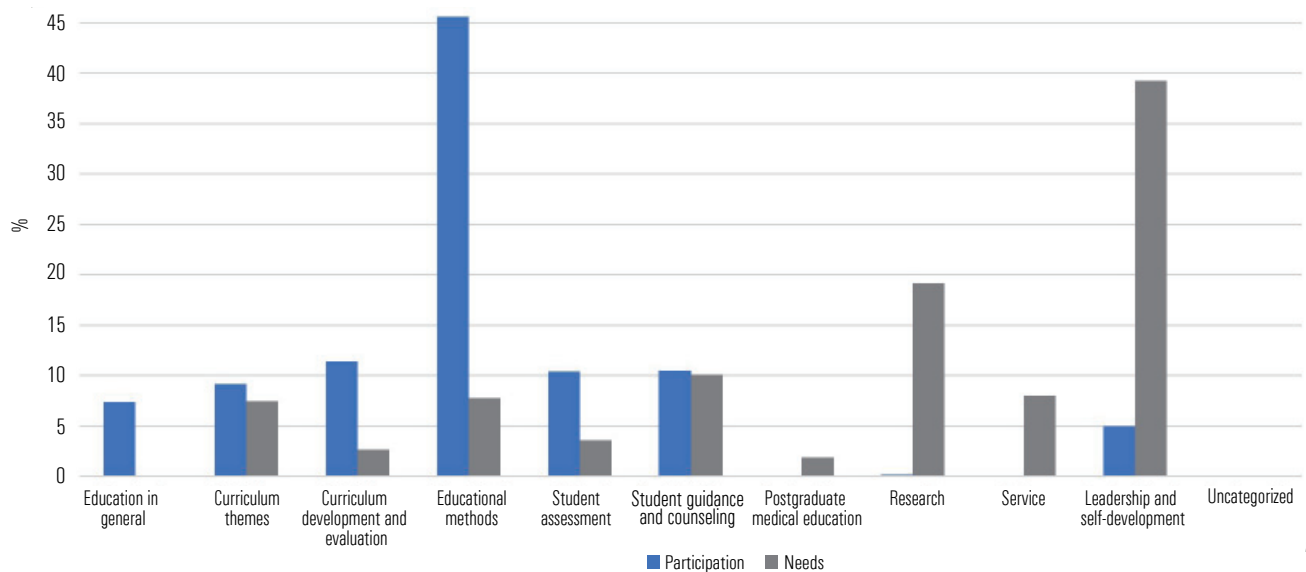


Table 2. Number of Participations in Faculty Development Programs Based on the Characteristics of Respondents (N=256)

Variable	Non-standardized coefficients		Standardization coefficient (β)	t (p-value)	Tolerance	VIF
	B	SE				
(Constant)	13.453	0.946		14.218		
Age group (yr)						
30s	-0.047	1.043	-0.003	-0.046	0.693	1.443
50s	-2.308	0.790	-0.267	-2.923**	0.454	2.202
60s	-2.167	1.405	-0.111	-1.542	0.725	1.379
Gender (female)	0.651	0.615	0.071	1.059	0.855	1.170
Position						
Assistant professor	-1.193	0.939	-0.125	-1.269	0.393	2.544
Associate professor	-1.493	0.822	-0.155	-1.816	0.520	1.925
Others	-1.436	1.746	-0.055	-0.823	0.841	1.188
Major						
Basic Medicine	0.134	0.681	0.013	0.197	0.896	1.117
Medical Humanities	1.101	1.445	0.049	0.762	0.930	1.075
Medical Education	2.620	1.559	0.109	1.681	0.909	1.100
Others	-0.973	1.997	-0.031	-0.487	0.956	1.046
At least two majors	-1.181	0.952	-0.080	-1.241	0.907	1.103
The percentage of time devoted						
Teaching	0.090	0.017	0.358	5.281***	0.824	1.214
Research	-0.056	0.018	-0.200	-3.114**	0.918	1.089
Service	0.017	0.031	0.035	0.544	0.892	1.121
F (p-value)				3.53		
Adjusted R ²				0.144		
Durbin-Watson				1.984		

SE: standard error, VIF: Variance inflation factor.

p<0.01. *p<0.001.

of time devoted to teaching participated in more FD programs, while those who a higher percentage of time dedicated to research participated in fewer programs. Gender, position, and major did not have a significant effect (Table 2). Second, in terms of FD program topics participated in, professors in basic medicine, medical humanities, medical education, and those with more than one specialty were more likely to have recently participated in curriculum development and evaluation programs (Appendix 2). Age, gender, position, and proportion of time devoted did not have a significant effect.

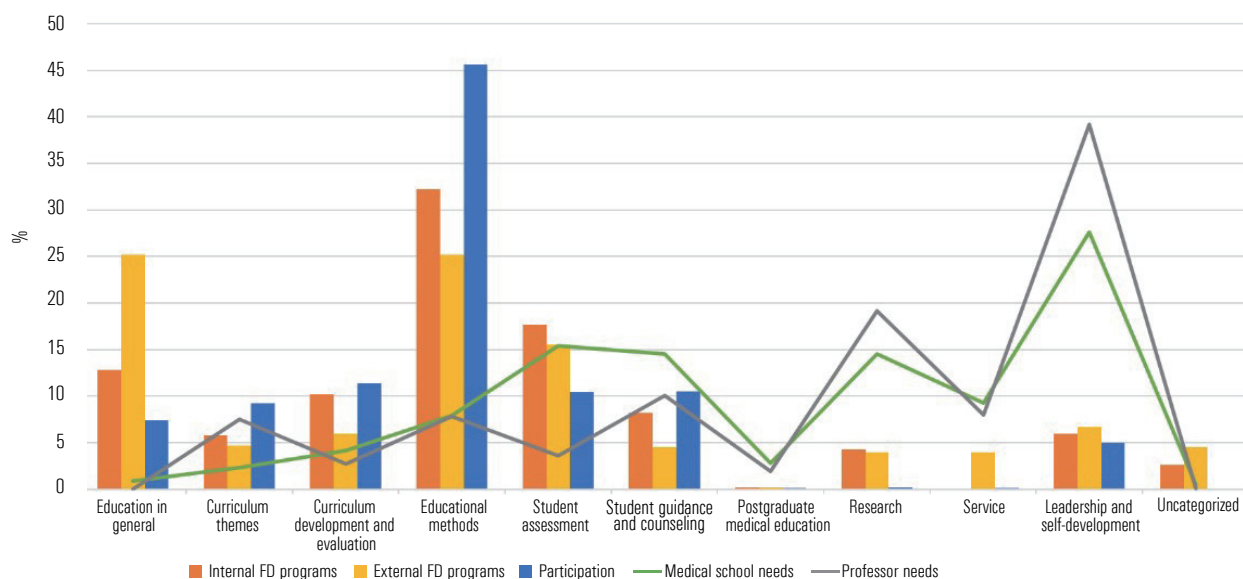
The needs of FD programs differed according to the number of times the professor had participated in internal and external programs. The more times the professor participated in internal programs, the more needs they had for student assessment. The more times the professor

participated in the KAMC program, the more needs they had for curriculum themes. The more times the professor participated in the NTTTC program, the more needs they had for research. The more times the professor participated in the KSME program, the more needs they had in curriculum development and evaluation (Appendices 3-6).

3. Gaps between medical school and professors

Fig. 3 shows the gaps in the current FD programs, participation, and needs between medical schools and individual professors. The largest gaps between current medical school FD programs and professor participation were found for education in general, student assessment, and educational methods. Professor participation in

Fig. 3. Gaps between Medical Schools and Professors for FD Programs



FD: Faculty development.

education in general and student assessment was low relative to the medical school programs offered, while professor participation in educational methods was higher relative to the programs offered. In terms of needs, the largest gaps were found for student assessment and leadership and self-development. Student assessment is a lower need for professors compared to medical school needs, and leadership and self-development is a higher need for professors, although medical school needs are also high.

Discussion

FD programs can improve the knowledge, skills, and professional competence of faculty members [12]. Moreover, the primary role of professors should be substantially considered in FD. In medical schools, the order of importance of professors' responsibilities is clinical practice, research, teaching, and service. In terms of the workload of the clinical professors, according to our survey, the order of importance is clinical practice,

research, teaching, and service. Meanwhile, in terms of basic medicine professors' workload, the order of importance is research, teaching, service, and clinical practice. In addition, for professors in medical education and medical humanities, the order of importance is teaching, research, clinical practice, and service. According to the study by Kim et al. [13], the order of importance of accountability was research, teaching, clinical practice, and service. For clinical medicine professors, it was clinical practice, research, teaching, and service, but for basic medicine professors, it was research, teaching, service, and clinical practice. Although these results were obtained 20 years ago, the importance of work and accountability is similar for clinical and basic medical faculties. With the increasing proportion of clinical medicine faculties and emphasizing patient care at medical school hospitals, the importance of clinical practice has also increased.

Given the roles, responsibilities, and workload of professors, there is a need to broaden and diversify the topics, levels, and methods of teaching-oriented FD programs. Although the internal and external FD programs

operated by medical schools (Table 1, Fig. 1) are mainly composed of teaching-related topics, most of the required program topics are other than teaching, except for student evaluation. Most of the programs in which professors participated were in the field of education. However, leadership, research, and service are topics that are in greater demand than those in which the professor participated. The survey results on the current status and needs of FD programs in Korea also show that most of them are limited to medical education [6-8]. In particular, leadership and self-development, research, and service, which are highly needed areas compared to the number of programs in operation, need to be expanded. Moreover, student guidance and counseling, and postgraduate medical education can be supplemented. Among the areas mentioned above, FD to improve leadership has been shown to be useful and beneficial and resulted in improved outcomes [14,15]. When organizing and improving FD programs and systems, a well-rounded program that covers not only teaching but also service, research, leadership, career development, and academic development is needed to address the major roles of faculty [1,16,17].

Medical schools have high needs in terms of research and leadership, but professors have higher needs. Medical schools have a higher need for student assessment, guidance, and counseling, whereas faculty have a higher need for curriculum themes. The specific roles and performance evaluations of faculties have gradually changed. Accordingly, the educational needs for FD have also changed. The number and topics of FD programs vary by professor role, and topics also vary by major. In addition, there has been a growing interest in self-care and life among professors with the increasing importance of work-life balance. Although FD programs are being implemented according to the needs and plans of medical school deans, FD officers, and educational experts at FD

institutions, they must be tailored to meet the needs and performance of individual faculty members [11,18]. FD needs to shift from a system dominated by a few experts toward one that is more responsive to the needs of participating professors.

Professors can be broadly categorized into clinical, basic, medical education, and medical humanities based on their majors. Moreover, their positions include instructors, professors, assistant professors, and associate professors. However, FD programs are mostly general professor programs regardless of the major and position. The specific roles and competencies of professors vary depending on their major and position. The expected roles of professors, assistant professors, and associate professors are different in terms of research, administration, and teaching [19,20]. Therefore, in addition to the needs of medical schools and professors, customized programs are needed depending on the major and position. Just as there is a new professor workshop for new professors, programs should be tailored for course chairs, department chairs, directors, and deans based on their job titles. In this study, there was no significant difference in the needs of medical school professors by position. However, other positions (clinical professors, research professors, and so forth) had a higher needs for educational methods, and the higher the percentage of teaching, the higher the needs for curriculum development and evaluation, and the lower the needs for postgraduate medical education (data not shown). In the study on university faculty members, the needs and importance of teaching competencies differed depending on the length of experience and major field, and support programs and improvement methods differed accordingly [18].

The development and implementation of a needs-based, customized FD program requires a medical school FD office and experienced staff [21,22]. Ongoing quality control and regular evaluation are needed to ensure that

the program remains relevant to changing needs [9,23]. For highly engaged and disengaged professors, it is important to identify factors that discourage participation (e.g., lack of time and low interest) and to develop ways to motivate them, respectively [24]. This weakness can be compensated for by having an FD office with the expertise to manage faculty engagement, a flexible and personalized FD curriculum [11], and a systemic strategy in terms of institutional culture, reimbursement, appreciation, utility, and accessibility [25]. On the basis of these recommendations, it is necessary to establish an FD program system that can be applied to all 40 medical schools.

Depending on the number of internal and external programs in which the professors participated, the topics they would like to participate in the future vary. Therefore, collaborative FD between medical schools and FD institutions requires distinction between their roles. Although FD institutions have been in operation for a long time and have demonstrated their characteristics, there are a few factors to consider as each medical school develops its FD capacity. Medical schools should focus on topics that are basic and essential for medical school professors with appropriate competencies (e.g., educational methods and student assessment), whereas FD institutions should focus on specialized topics that are necessary for some faculties (e.g., curriculum development and evaluation and new curriculum themes). FD institutions may develop institution-specific strategies based on the expected needs of medical school professors and offer differentiated programs based on the intended audience. They may also need to support FD programs in medical schools with small faculties or those requiring specialized expertise. It is up to each medical school to organize FD programs according to the position and role of their professors.

A limitation of this study is that it reflected the opinions of professors who participated in FD programs and did not reflect the opinions of passive professors who did not

participate in FD programs. Therefore, it would be helpful to conduct future research on professors who do not participate or are not interested in FD programs. In addition, as a follow-up study, a qualitative study to reflect more detailed opinions of stakeholders on FD would be beneficial for the operation of a well-functioning FD program. We would also like to propose a practical study on the development of customized faculty development strategies for each FD institution or medical school, and the establishment of FD program systems according to positions or majors.

ORCID:

Ji Hyun Im: <https://orcid.org/0000-0002-9573-1695>;

Wha Sun Kang: <https://orcid.org/0000-0001-7194-0268>;

Seung Hee Lee: <https://orcid.org/0000-0001-8672-5253>;

Dae Chul Jeong: <https://orcid.org/0000-0003-0934-817X>;

Dae Hyun Kim: <https://orcid.org/0000-0002-7313-2384>;

Man-Sup Lim: <https://orcid.org/0000-0001-9222-2740>;

Miran Kim: <https://orcid.org/0000-0001-5553-5334>;

Ji-Hyun Seo: <https://orcid.org/0000-0002-0691-3957>;

Dong Hyeon Lee: <https://orcid.org/0000-0003-0511-6910>

Acknowledgements: None.

Funding: This research was supported by the Korea Association of Medical Colleges, faculty committee.

Conflicts of interest: Ji-Hyun Seo serves as an Editorial Board member of the *Korea Journal of Medical Education* but has no role in the decision to publish this article. Except for that, no potential conflict of interest relevant to this article was reported.

Author contributions: Conceptualization: DHL, SHL, DCJ, DHK, ML, MK, JS. Data curation: JHI. Formal analysis: JHI. Funding acquisition: DHL. Investigation: SHL, DCJ, DHK, ML, MK, JS. Project administration: DHL. Supervision: WSK. Visualization: JHI. Writing-original draft: all authors. Writing-review & editing: all

authors. Final approval of the version to be published: all authors.

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Appendix 1. General Characteristics of Respondents (N=256)

Variable	No. (%)
Age group (yr)	
30s	23 (9.0)
40s	122 (47.7)
50s	97 (37.9)
60s	13 (5.1)
No response	1 (4.0)
Gender	
Male	181 (70.7)
Female	74 (28.9)
No response	1 (4.0)
Position	
Assistant professor	63 (24.6)
Associate professor	64 (25.0)
Professor	121 (47.3)
Others	7 (2.7)
No response	1 (4.0)
Major	
Basic Medicine	52 (20.3)
Clinical Medicine	158 (61.7)
Medical Humanities	9 (3.5)
Medical Education	9 (3.5)
Others	4 (1.6)
At least two majors	24 (9.4)

Appendix 2. Participation in “Curriculum Development and Evaluation” Based on the Major of Respondents (N=256)

Variable	Non-standardized coefficients		Standardization coefficient (β)	t (p-value)	Tolerance	VIF
	B	SE				
(Constant)	0.399	0.04		9.848		
Basic Medicine	0.197	0.081	0.152	2.426*	0.944	1.059
Medical Humanities	0.379	0.174	0.134	2.173*	0.981	1.02
Medical Education	0.379	0.174	0.134	2.173*	0.981	1.02
Others	-0.149	0.258	-0.035	-0.577	0.991	1.009
At least two majors	0.351	0.112	0.196	3.15**	0.958	1.044
F (p-value)				4.043		
Adjusted R ²				0.056		
Durbin-Watson				2.024		

SE: Standard error, VIF: Variance inflation factor.

*p<0.05. **p<0.01.

Appendix 3. Need for “Student Assessment” Based on the Number of Participations in Internal FD Programs (N=256)

Variable	Non-standardized coefficients		Standardization coefficient (β)	t (p-value)	Tolerance	VIF
	B	SE				
(Constant)	0.262	0.124		2.117		
No. of participations in internal FD programs	0.104	0.03	0.216	3.476***	1.000	1.000
F (p-value)			12.081			
Adjusted R ²			0.043			
Durbin-Watson			2.04			

FD: Faculty development, SE: Standard error, VIF: Variance inflation factor.

***p<0.001.

Appendix 4. Need for “Curriculum Themes” Based on the Number of Participations in KAMC FD Programs (N=256)

Variable	Non-standardized coefficients		Standardization coefficient (β)	t (p-value)	Tolerance	VIF
	B	SE				
(Constant)	0.742	0.16		4.652		
No. of participations in KAMC FD programs	0.325	0.076	0.261	4.261***	1.000	1.000
F (p-value)			18.156			
Adjusted R ²			0.064			
Durbin-Watson			1.898			

KAMC: Korean Association of Medical Colleges, FD: Faculty development, SE: Standard error, VIF: Variance inflation factor.

***p<0.001.

Appendix 5. Need for “Research” Based on the Number of Participations in NTTC FD Programs (N=256)

Variable	Non-standardized coefficients		Standardization coefficient (β)	t (p-value)	Tolerance	VIF
	B	SE				
(Constant)	2.307	0.342		6.749		
No. of participations in NTTC FD programs	0.613	0.159	0.238	3.865***	1.000	1.000
F (p-value)			14.941			
Adjusted R ²			0.053			
Durbin-Watson			1.943			

NTTC: National Teacher Training Center, FD: Faculty development, SE: Standard error, VIF: Variance inflation factor.

***p<0.001.

Appendix 6. Need for “Curriculum Development and Evaluation” Based on the Number of Participations in KSME FD Programs (N=256)

Variable	Non-standardized coefficients		Standardization coefficient (β)	t (p-value)	Tolerance	VIF
	B	SE				
(Constant)	0.237	0.096		2.474		
No. of participations in KSME FD programs	0.139	0.047	0.184	2.941**	1	1
F (p-value)			14.941			
Adjusted R ²			0.053			
Durbin-Watson			1.943			

KSME: Korean Society of Medical Education, FD: Faculty development, SE: Standard error, VIF: Variance inflation factor.

**p<0.01.