



■ Original Article

# Defining Essential Topics and Procedures for Korean Family Medicine Residency Training

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**Background:** This study aims to create a comprehensive list of essential topics and procedural skills for family medicine residency training in Korea.

**Methods:** Three e-mailed surveys were conducted. The first and second surveys were sent to all board-certified family physicians in the Korean Academy of Family Medicine (KAFM) database via e-mail. Participants were asked to rate each of the topics (117 in survey 1, 36 in survey 2) and procedures (65 in survey 1, 19 in survey 2) based on how necessary it was to teach it and personal experience of utilizing it in clinical practice. Agreement rates of the responses were calculated and then sent to the 32 KAFM board members in survey 3. Opinions on potential cut-off points to divide the items into three categories and the minimum achievement requirements needed to graduate for each category were solicited.

**Results:** Of 6,588 physicians, 256 responded to the first survey (3.89% response rate), 209 out of 6,669 to the second survey (3.13%), and 100% responded to the third survey. The final list included 153 topics and 81 procedures, which were organized into three categories: mandatory, recommended, and optional (112/38/3, 27/33/21). For each category of topics and procedures, the minimum requirement for 3-year residency training was set at 90%/60%/30% and 80%/60%/30%, respectively.

**Conclusion:** This national survey was the first investigation to define essential topics and procedures for residency training in Korean family medicine. The lists obtained represent the opinions of Korean family physicians and are expected to aid in the improvement of family medicine training programs in the new competency-based curriculum.

**Keywords:** Internship and Residency; Education; Curriculum; Topic; Procedure; Family Medicine

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## INTRODUCTION

Family medicine, or general practice as described in some countries, by definition, requires a wide, comprehensive range of medical knowledge and the ability to perform diverse clinical procedures. As such, even with the 2005 Korean Academy of Family Medicine (KAFM) residency curriculum under implementation, individual family medicine residency training programs vary widely. In part, this may have to do with the 2005 curriculum being too vast and inclusive. To ensure the quality of next-generation family physicians, especially with the new labor laws restricting resident hours to less than 80 hours a week, it is becoming increasingly important to define “essential” or “core” topics and procedures.

Lists of core topics or procedural skills for family medicine residency training programs have been created in several countries by varying methods with diverse outcomes.<sup>1-6)</sup> In the case of procedural skills, for instance, in Canada, an initial survey of all residency program directors of family medicine produced 24 lists with the number of skills varying from 10 to 75.<sup>7)</sup> The currently used versions of the lists of priority topics and core procedures are much more comprehensive and will be described later. The United States also initially surveyed all program directors and obtained 63 lists of procedures with varying numbers of skills (3–117).<sup>8)</sup> Currently, two lists of procedural skills (required and advanced) are in circulation, and the Residency Curriculum Resources Project is under progress for the selection of topics.<sup>9,10)</sup> The Royal College of General Practitioners also had a list of mandatory procedural skills, although recent changes discarded the specific list and now it requires five mandatory exams with others that are not specified.<sup>11)</sup>

The KAFM, through the Section of the Residency Training Committee, commissioned the Working Group in 2018. This paper describes the process followed by the Working Group for developing a refined list of topics and procedures specifically for training family medicine doctors in Korea.

## METHODS

This study was conducted using three Internet surveys. The first and second surveys utilized Google Forms and were sent to all board-certified family physicians in the KAFM e-mail database. The third survey was sent to board members of the KAFM via conventional e-mail correspondence. This study was approved by the Institutional Review Board of Severance Hospital (approval no., 4-2020-0969). Informed consent was waived.

### 1. First Survey

Participants were given lists of the Canadian 99 priority topics, 65 core procedures, and 18 topics from the 2005 KAFM residency curriculum. They were asked to rate each topic or procedure according to the following two statements: (1) Statement 1: “I would expect a graduate of a 3-year family medicine program in Korea to have learned this topic or procedure.” (2) Statement 2: “I have personally experienced utilization of knowledge of this topic or performed this procedure after resi-

dency training.”

The answer options for statement 1 were “agree,” “neutral,” and “disagree.” The options for statement 2 were “yes” and “no.” Participants were additionally asked to add any topics or procedures that they thought should be covered in residency training.

### 2. Second Survey

All participants were given a list of 36 topics and 19 procedural skills that were newly produced from the first survey. They were asked to rate each topic and procedure in the same manner as in the first survey.

### 3. Third Survey

The KAFM board members were given a compiled list of 153 topics and 84 procedures gathered from surveys 1 and 2. All topics and procedures were presented as percentages of positive responses from high to low for statements 1 (need) and 2 (used), respectively. For statement 1, we included the rating “neutral” as “agree” in the calculation. Participants were asked to fill in percentages in the blanks in the following statements and reply by e-mail.

- (1) I think topics with a “used” percentage above ( )% or “need” percentage above ( )% should be classified as “mandatory,” and at least ( )% of the “mandatory” topics should be covered in a 3-year residency training program.
- (2) I think topics with “used” percentage above ( )% or “need” percentage above ( )% should be classified as “recommended,” and at least ( )% of the “recommended” topics should be covered in a 3-year residency training program.
- (3) I think topics with “used” percentage above ( )% or “need” percentage above ( )% should be classified as “optional,” and at least ( )% of the “optional” topics should be covered in a 3-year residency training program.

The same statements were also presented for procedures.

**Table 1.** Baseline characteristics of participants

Characteristic	First survey (n=256)	Second survey (n=209)
Gender		
Female	107 (41.8)	75 (36.4)
Male	149 (58.2)	131 (63.6)
Area		
Capital region	145 (56.7)	100 (48.5)
Non-capital region	111 (43.3)	109 (51.5)
Status		
Academic	142 (55.5)	88 (42.7)
Non-academic	114 (44.5)	121 (57.3)
Years in practice		
0–5	90 (35.1)	74 (35.9)
5–10	66 (25.8)	47 (22.8)
10–15	43 (16.8)	36 (17.5)
15–20	22 (8.6)	19 (9.2)
>20	35 (13.7)	30 (14.6)

Values are presented as number (%).

**Table 2.** 153 Essential topics for family medicine residency training derived by family physician survey

Variable	153 Essential topics
112 Mandatory topics	
1	Advanced cardiac life support
2	Chronic obstructive pulmonary disease
3	Electrocardiogram interpretation
4	Research in family medicine
5	Family issues
6	Family-centered care
7	Hepatitis
8	Infections
9	Thyroid disorders
10	Health supplements
11	Conjunctivitis
12	Tuberculosis
13	Hyperlipidemia
14	Hypertension
15	Osteoporosis
16	Fractures
17	Joint disorders
18	Education (patient/physician)
19	Earache
20	Evidence-based medicine
21	Smoking cessation
22	Cough
23	Other endocrinology
24	Other rheumatology (e.g., gout)
25	Other cardiology
26	Other ear, nose, and throat conditions
27	Other pulmonology
28	Bad news
29	Elderly
30	Aging
31	Stroke
32	Gallbladder polyp
33	Cholecystitis
34	Gallbladder stones
35	Diabetes
36	Difficult patient
37	Headache
38	Chronic disease
39	Neck pain
40	Substance abuse (including alcohol)
41	Fever
42	Dysuria
43	Abdominal pain
44	Multiple medical problems
45	Sinusitis
46	Arrhythmia
47	Insomnia
48	Anxiety
49	Obesity
50	Rhinitis
51	Epistaxis
52	Anemia
53	Upper respiratory infection
54	Lifestyle
55	Diarrhea
56	Sexually transmitted infections

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**Table 2.** Continued

Variable	153 Essential topics
57	Children and adolescents
58	Dyspepsia
59	Stress
60	Somatization
61	Atrial fibrillation
62	Heart failure
63	Red eye
64	Dry eye
65	Allergy
66	Cancer; overview (including initial diagnosis and evaluation, family counselling)
67	Grief
68	Pharmacology (including polypharmacy)
69	Dizziness
70	Travel medicine
71	Gastroesophageal reflux disease
72	Lacerations
73	Diagnostic imaging (ultrasound, computed tomography, X-ray, etc.)
74	Intravenous nutrition therapy
75	Nutrition
76	Immunization
77	Urinary tract infection
78	Low-back pain
79	Depression
80	Exercise
81	Gastritis/peptic ulcer disease
82	Gastrointestinal bleed
83	Breast lump
84	Medical ethics
85	Mental competency
86	Loss of consciousness
87	Private clinic administration
88	Tinnitus
89	Prostate disorders
90	Periodic health assessment/screening
91	Counselling
92	Otitis media
93	Disease prevention and health promotion
94	Vaginitis
95	Asthma
96	Weight loss
97	Dementia
98	Hemorrhoids
99	Croup
100	Alopecia
101	Dehydration
102	Pain medicine (trigger point injection, block, medication, etc.)
103	Menopause
104	Pneumonia
105	Fatigue
106	Skin disorders
107	Contraception
108	Antibiotics
109	Ischemic heart disease
110	Palliative care
111	Medical interview skills and the doctor-patient relationship

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Table 2. Continued

Variable	153 Essential topics
112	Chest pain
38 Recommended topics	
1	Obstructive sleep apnea
2	Domestic violence
3	Well-baby care
4	Seizures
5	Oral health maintenance
6	Sarcopenia
7	Violent/aggressive patient
8	Glaucoma
9	Meningitis
10	Lacrimal disorder
11	Manual therapy
12	Poisoning
13	Homecare medicine
14	Cataract
15	Complementary alternative medicine
16	Adrenal insufficiency
17	Infertility
18	Eating disorders
19	Gender-specific issues
20	Sex
21	Rape/sexual assault
22	Care of the surgical patient
23	Disability
24	Deep venous thrombosis
25	Trauma
26	Healthcare-related legislation and policy (including health insurance bills)
27	Immigrants
28	Personality disorder
29	Pregnancy
30	Suicide
31	Crisis
32	Schizophrenia
33	Community care
34	Vaginal bleeding
35	Parkinsonism
36	Cosmetic dermatology
37	Behavioral disorders
38	Other hemato-oncology including basic concepts on major malignancies and treatment
3 Optional topics	
1	Retinal disorders
2	Newborns
3	Current issues in medicine (e.g., machine learning, genomics)

## RESULTS

Regarding response rates, 256 physicians out of 6,588 responded to the first survey (3.89% response rate) and 209 out of 6,669 to the second survey (3.13% response rate). (Updates to the e-mail database of KAFM explain the number discrepancy.) All 32 board members responded to the third survey. The baseline characteristics of the participants in the first and second surveys are shown in Table 1.

A total of 153 topics and 84 procedures were identified in the first and second surveys. Three procedures were deleted after the third survey; two due to minimal agreement (endometrial aspiration biopsy and artificial rupture of membranes) and one due to possible redundancy, resulting in a final total of 81. The majority of topics were observed to be both considered essential and utilized in practice, with the exception of 19 topics that were thought needed but not personally used (advanced cardiac life support, croup, domestic violence, immigrant health, infertility, newborns, poisoning, rape/sexual assault, schizophrenia, seizures, suicide, care of the surgical patient, homecare medicine, current issues in medicine, lacrimal disorder, retinal disorder, glaucoma, cataract, and manual therapy). In contrast, less than half of the procedures (n=35) were evaluated as both performed and needed.

We categorized the topics and procedures into three groups based on responses to the e-mail surveys: “mandatory,” “recommended,” and “optional.” A total of 112 mandatory topics were defined by the response percentile of above either 70% for “used” or 80% for “need,” and minimum requirement of achievement was set at 90%. The minimum achievement requirements for the 38 recommended topics (40%–70% use or 50%–80% need) and three optional topics (30%–40% use or 40%–50% need) were set at 50% and 30%, respectively (Table 2).

The 27 mandatory procedures were defined by the response percentile of above either 60% for “used” or 80% for “need,” and minimum requirement of achievement was set at 80%. The minimum achievement requirements for the 33 recommended procedures (40%–60% use or 60%–80% need) and 21 optional procedures (20%–40% use or 30%–60% need) were set at 60% and 30%, respectively (Table 3).

## DISCUSSION

It comes as no surprise that early attempts at defining “essential” or “core” lists of topics and procedures produced widely varying results domestically, as have the final versions differed largely between countries. In the aforementioned surveys, only 30 procedural skills were common in more than half of the propositioned lists in Canada<sup>7</sup> and 25 in the United States.<sup>8</sup> Practice location has been reported to influence clinical performance; for example, more skills are utilized more often in rural areas compared to urban regions. Clinical settings, such as training versus non-training hospitals or different tiers of healthcare facilities, would also be significant influencing factors, just to name a few.<sup>12,13</sup>

There is no “correct answer” when it comes to defining essential topics and procedures; cultural differences with related lifestyle factors create different needs in different nations. Even within one country, “common” clinical issues and frequently applied medical skills are varied, as are community needs. Cost effectiveness is another factor to be considered, as well as the limited timeline available for residency training, which changes with the times.

Thus, it is not surprising that vast differences exist in the methodologies and participant demographics of previously developed “lists” between countries. For example, Canada, a front-runner in the field, even had different processes for selecting topics and procedures. For

**Table 3.** 81 Essential procedures for family medicine residency training derived by family physician survey

Variable	81 Essential procedures
27 Mandatory procedures*	
1	Esophagogastroduodenoscopy
2	Musculoskeletal joint exam
3	Neurologic exam
4	Oral airway insertion
5	Wound care (burn, dressing...)
6	Infiltration of local anesthetic
7	Removal of foreign body in ear
8	Removal of cerumen
9	Intramuscular injection
10	Endotracheal intubation
11	Abscess incision and drainage
12	Fecal occult blood testing
13	Placement of transurethral catheter
14	Peripheral intravenous line
15	Bag-and-mask ventilation
16	Laceration repair; sutures and adhesives, etc.
17	Removal of foreign body in nose
18	Nasogastric tube insertion
19	Application of sling-upper extremity
20	Otoscopy
21	Removal of foreign body
22	Splinting of injured extremities
23	Pap smear
24	Venipuncture
25	Cardiac defibrillation
26	Intradermal injection
27	Subcutaneous injection
33 Recommended procedures	
1	Allergy skin test
2	Antibiotics skin test
3	Cardioversion
4	Central venous catheter insertion
5	Colonoscopy
6	Epley maneuver
7	Paracentesis
8	Trigger point injection, intramuscular stimulation
9	Wedge excision for ingrown toenail
10	Pare skin callus
11	Drainage acute paronychia
12	Peripheral venous access-infant
13	Aspiration/injection, knee joint
14	Application of below-knee cast
15	Partial toenail removal
16	Wound debridement
17	Adult lumbar puncture
18	Reduction of dislocated finger
19	Digital block in finger or toe
20	Application of eye patch
21	Aspiration/injection, shoulder joint
22	Reduce dislocated shoulder
23	Lateral epicondyle injection; tennis elbow
24	Application of ulnar gutter splint
25	Use of Wood's lamp
26	Anterior nasal packing
27	Application of forearm cast
28	Release subungual hematoma

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**Table 3.** Continued

Variable	81 Essential procedures
29	Reduce dislocated radial head; pulled elbow
30	Application of scaphoid cast
31	Skin scraping for fungus determination
32	Anoscopy/proctoscopy
33	Aspiration and injection of bursae; such as patellar, subacromial
21 Optional procedures	
1	Biopsy (fine-needle aspiration biopsy, ultrasound-guided core needle biopsy)
2	Chest tube insertion
3	CO <sub>2</sub> laser
4	Diaphragm fitting and insertion
5	Prolotherapy
6	Thoracentesis
7	Ventilator care
8	Removal of corneal or conjunctival foreign body
9	Cryotherapy or chemical therapy genital warts
10	Slit lamp examination
11	Aspirate breast cyst
12	Insertion of intrauterine device
13	Cautery for anterior epistaxis
14	Normal vaginal delivery
15	Instillation of fluorescein
16	Excision of dermal lesions; e.g., papilloma, nevus, cyst
17	Cryotherapy of skin lesions
18	Electrocautery of skin lesions
19	Skin biopsy; shave, punch, excisional
20	Incision/drain thrombosed external hemorrhoid
21	Episiotomy and repair

\*Insertion of sutures was deleted due to possible redundancy.

topics, a postal survey of write-in answers was sent to randomly selected 302 examiners in the certification examination of the College of Family Physicians of Canada; the response rate was 54% (n=163), and no demographic data were collected.<sup>1)</sup> In selecting procedures, the Delphi technique was employed, with randomly chosen physicians asked to fill surveys to rate the procedures. Participants were evenly recruited from academic, urban, small town, and rural groups, and the total number of participants was 24.<sup>7)</sup> In the United States, an initial 2001 procedural survey was conducted with 326 residency program directors out of 467;<sup>8)</sup> the current consensus was developed by a subset of The Society of Teachers of Family Medicine Group on Hospital Medicine and Procedural Training consisting of 17 family physician educators with varied backgrounds and locations.<sup>9)</sup>

In our study, we were able to collect opinions from a diverse population of family physicians to form a consensus based on educational necessity and clinical utility specific to the current medical environment in Korea. This is the first attempt to define a set of essential clinical topics and procedural skills for family medicine residency training in Korea using opinions from physicians in various settings, representing the general family physicians of Korea. Our findings, similar to those of other studies, showed that educational expectations were



much higher than actual personal performance.<sup>1)</sup>

There were some limitations in the development of the core lists. The biggest would be the relatively low response rates of the surveys, which could lessen the generalizability of the findings across the diversity of family medicine doctors throughout the nation. Availability of detailed demographic information of all 9,824 KAFM members (as of 2021) is limited due to restrictions on accessing personal information. However, gender composition and academic status is in the public domain. The majority of members (95.2%) have non-academic status, which shows discrepancy of approximately 50% with our survey responders. Second, collecting self-reported data, which was unavoidable due to the nature of the surveys, may have influenced the responses. Third, the pool of participants may be slightly biased; it can be deduced that the responses were submitted by individuals more interested in residency training than others.

However, our study has several strengths, such as the similar percentage of participation from the non-academic and academic sectors in the first and second surveys, which (had it been predominantly from academic participants) could otherwise may have led to very skewed results. Moreover, gender composition (40.0% female and 60.0% male) of all KAFM members is very similar to the composition of our first and second survey responders. The wide distribution of years in practice (new to over 20 years) also should help in identifying the needs of both young and new-generation doctors as well as benefiting from the time-proven wisdom of the old and experienced generation. Additionally, family medicine practitioners from various regions across the country, including metropolitan cities and rural provinces, participated in the survey from all tiers of healthcare facilities.

When commencing this investigation, the Working Group envisioned these lists to serve as a means of assessment or blueprint for residency training programs, especially with the upcoming transition to a novel competency-based educational curriculum for family medicine. In particular, the aim was to potentially help clarify the broad “mandatory (key) features” within the KAFM’s 15 entrustable professional activities; modifications and adjustments are ongoing to refine the lists for application.

In conclusion, the Working Group defined core lists of clinical topics and procedural skills for Korean family medicine residency training for the first time. The lists were derived based on the broadly agreeing opinions of diverse family medicine physicians across the nation belonging to a variety of clinical settings. Future application of these findings is expected to aid in effectively ensuring quality education in residency training and forming guidelines for training program evaluation. It is important to conduct further research, building on this preliminary study, to improve and refine the list.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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