

Overcoming Barriers to Research Competency: a nationwide mixed-method study on residency training in the field of Korean medicine

Min-jung Lee¹, Myung-Ho Kim^{2*}

¹Department of Medical Education, Seoul National University College of Medicine, Seoul, Republic of Korea

²Department of Internal Korean Medicine, Woosuk University Medical Center, Jeonju, Republic of Korea

Received March 19, 2024
Reviewed March 22, 2024
Accepted April 9, 2024

Objectives: This study aimed to analyze the educational needs of interns and residents in Korean medicine as the first step in developing an education program to improve their research competencies.

Methods: A mixed-method design, incorporating both quantitative and qualitative data collection methods, was used to investigate the educational needs for research competencies among interns and residents working in Korean medicine hospitals nationwide. Data were collected through online surveys and online focus group discussions (FGDs), and processed using descriptive statistical analysis and thematic analysis. The study results were derived by integrating survey data and FGD outcomes.

Results: In total, 209 interns and residents participated in the survey, and 11 individuals participated in two rounds of FGDs. The majority of participants felt a lack of systematic education in research and academic writing in postgraduate medical education and highlighted the need for nationally accessible education due to significant disparities in the educational environment across hospitals and specialties. The primary barrier to learning research and academic writing identified by learners was the lack of knowledge, leading to time constraints. Improving learners' research competencies, relationship building, autonomy, and motivation through a support system was deemed crucial. The study also identified diverse learner types and preferred educational topics, indicating a demand for learner-centered education and coaching.

Conclusion: This study provides foundational data for designing and developing a program on education on research competencies for interns and residents in Korean medicine and suggests the need for initiatives to strengthen these competencies.

Keywords: graduate medical education, needs assessment, competency-based education, Korean traditional medicine, motivation

*Corresponding Author

Myung-Ho Kim
Department of Internal Korean Medicine,
Woosuk University Medical Center, 46
Eoeun-ro, Wansan-gu, Jeonju 54987,
Republic of Korea
Tel: +82-63-220-8691
E-mail: check8x8@gmail.com

INTRODUCTION

Research competency education is crucial during internship and residency training to cultivate future human resources essential for developing medicine in Korea. The necessity of publishing a paper for residency program completion emphasizes the importance of research competencies. Residents participate in diverse research activities, but education quality varies by hospital and specialty. While some trainees pursue graduate

studies, a strong demand exists for targeted research competency education during internship and residency, customized to individual needs [1].

The Ministry of Health and Welfare mandates training hospitals to teach research design and paper writing as essential skills for medical residents [2]. Additionally, translational medicine emphasizes core competency-based education [3]. Institutions such as the New York Institute of Technology College of Osteopathic Medicine (NYITCOM) and universities (Boston

and Michigan) have improved research competencies in basic medical education (BME) and graduate medical education (GME). They have integrated comprehensive research competency education and track-wise mentoring into their programs [4-6]. This integration positively influences academic career progression [7].

Enhancing research competencies education should consider trainee motivation and focus on necessary core competencies. This includes defining core competencies, mapping them to educational activities, identifying educational gaps, developing and adjusting the curriculum, and continuously improving through evaluations after implementation [8].

The ADDIE model—widely used in curriculum development—comprises analysis, design, development, implementation, and evaluation stages. Identifying the needs of learners is crucial during the analysis phase, especially in adult learning, where motivation requirements are central [9]. Self-determination theory (SDT) highlights intrinsic motivation, autonomy, competence, and relatedness as crucial for learning motivation [10]. Furthermore, effective education requires identifying competency gaps and understanding the psychological needs of learners through their experiences [11].

Therefore, this study aims to investigate the educational needs of Korean medicine trainees to develop a program to improve their research competencies, using a mixed-method ap-

proach to gain a comprehensive understanding of their needs. The insights from this study could guide effective curriculum design and development.

MATERIALS AND METHODS

A sequential mixed-method design was employed in this study, combining quantitative surveys and qualitative focus group discussions (FGDs) to assess the research competency needs of Korean medicine interns and residents nationwide (Fig. 1).

Participants included interns and residents from Korean medicine hospitals across the country, with FGD volunteers selected from survey respondents. This study was approved by the Woosuk University Institutional Review Board (WSOH IRB H2311-02-01).

The survey comprised 39 questions across five domains: research education status, competencies, educational preferences, career paths, and demographics. The survey was conducted using multiple-choice, short answer, 5-point Likert scale, and open-ended formats. The questions and answers were developed based on existing surveys and theoretical frameworks related to the research education of the residents [1, 3, 12-15]. They were then validated through expert consultations. The survey was administered online via SurveyMonkey from No-

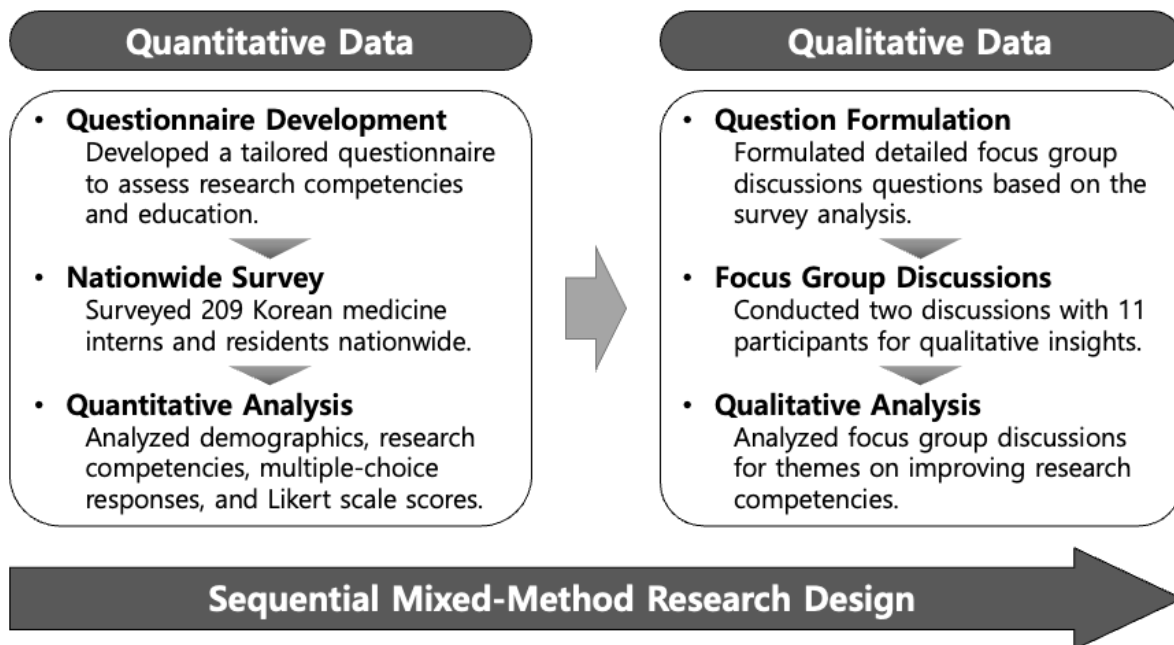


Figure 1. Sequential mixed-method design.

vember 28 to December 22, 2022. Detailed information on the survey is provided in [Supplement 12](#).

After the survey, volunteers from the respondents participated in two online FGDs on January 18 and 25, 2023. The purpose of the FGDs was to collect data (insights and opinions) from participants [16]. In this study, trained moderators conducted the FGDs online via Zoom, with groups of six and five participants, on January 18 and 25, 2023, respectively. Each

session lasted 200 min. The FGD questions were organized into five domains based on the survey results, which were developed through research meetings. The full text of the questions is presented in [Supplement 13](#).

Quantitative data analysis was conducted according to the question type. Descriptive statistics were used for Likert scales, and gaps between current levels and educational needs were assessed for research competency items. For multiple-choice

Table 1. Demographics of survey participants

Item	Response count	Percentage (%)
Gender		
Male	79	37.8
Female	130	62.2
Position		
Intern	43	20.57
First-year resident	47	22.49
Second-year resident	64	30.62
Third-year resident	55	26.32
Type of hospital affiliation		
University Korean medicine hospital	135	64.59
Non-university Korean medicine hospital	74	35.41
Specialized training hospital		
Yes	185	88.52
No	15	7.18
Not sure	9	4.31
Department		
Internship	39	18.66
Department of Internal Korean Medicine	42	20.1
Department of Korean Medicine Obstetrics and Gynecology	10	4.78
Department of Pediatrics of Korean Medicine	6	2.87
Department of Korean Medicine Neuropsychiatry	13	6.22
Department of Acupuncture & Moxibustion Medicine	48	22.97
Department of Korean Medical Ophthalmology, Otolaryngology & Dermatology	12	5.74
Department of Rehabilitation Medicine of Korean Medicine	33	15.79
Department of Sasang Constitutional Medicine	6	2.87
Graduate school enrollment		
No	99	47.37
Master's program	56	26.79
Master's program completed	4	1.91
Master's degree completed	20	9.57
Doctoral program	26	12.44
Doctoral program completed	4	1.91
Doctoral degree completed	0	0

questions, the respondent and case percentages were calculated, representing the proportion of specific responses to total responses and the proportion of respondents selecting each option out of 209 participants, respectively.

The qualitative data analysis process commenced with transcribing the FGDs and open-ended responses, followed by open coding using Atlas.ti. Subsequently, codes were categorized to form themes, and research meetings and peer reviews were conducted to ensure validity. The research findings were presented by integrating the survey results with the identified themes and categories derived from the FGDs.

RESULTS

1. Demographic characteristics

Table 1 displays the demographic characteristics of the 209 survey respondents, with an average age of 28.1 years (SD = 2.03). Participants in the two FGD sessions came from diverse backgrounds, offering a wide range of perspectives on the topics discussed (Table 2).

The integration of qualitative and quantitative analysis revealed several key categories and themes (Table 3).

2. Educational environment for developing research competencies during training

1) Addressing discrepancies in research and education environments across hospitals and departments

The survey revealed that 66.03% of residents received education in research and academic writing, whereas 33.97% did not. The education methods included mentoring/coaching (33.97%), lectures by professors (30.62%), resident-led programs (19.14%), and e-learning (18.18%) (Supplement 1).

The FGDs revealed significant disparities in research competency education and research environments across hospitals and specialties. University-affiliated hospitals provided structured research education along with faculty support for paper guidance and IRB reviews. Conversely, non-university hospitals primarily emphasized clinical training, offering limited research education and lacking faculty guidance for research. This absence of IRB support and research administration further complicated the research process. Residents highlighted the challenge of relying on senior residents for research coaching, particularly in fields with a limited number of trainees.

Participant 7: “Writing a paper in a non-university hospital largely depends on the goodwill of senior residents, creating a structurally dependent situation.”

Table 2. Demographics of focus group discussion participants

Session	Participant no.	Age	Gender	Position	Hospital type	Department	Specialized/ non-specialized training hospital	Graduate school enrollment
First FGD	Participant 1	28	Male	Second-year	Non-university	Rehabilitation medicine in Korean medicine	Specialized	Master's program
	Participant 2	28	Male	Second-year	Non-university	Acupuncture & moxibustion	Specialized	Master's program
	Participant 3	31	Female	Third-year	University	Acupuncture & moxibustion	Specialized	Doctoral program
	Participant 4	25	Female	Intern	University	Intern	Non-specialized	Bachelor's
	Participant 5	27	Male	First-year	University	Rehabilitation medicine in Korean medicine	Specialized	Master's program
	Participant 6	29	Female	Intern	University	Intern	Specialized	Bachelor's
Second FGD	Participant 7	29	Male	Third-year	University	Rehabilitation medicine in Korean medicine	Specialized	Master's degree completed
	Participant 8	28	Male	Second-year	Non-university	Internal Korean medicine	Specialized	Bachelor's
	Participant 9	27	Female	First-year	University	Internal Korean medicine	Specialized	Bachelor's
	Participant 10	30	Female	Third-year	University	Internal Korean medicine	Specialized	Bachelor's
	Participant 11	30	Male	Intern	University	Intern	Specialized	Master's degree completed

Table 3. Categories and themes from qualitative analysis

No.	Categories	Themes
1	The environment for education on research competencies during training	1) The need to consider discrepancies in research and education environments across hospitals and departments 2) "If only I had learned it during my undergraduate studies...": Exposure to research in clinical fields during undergraduate studies helps during residency
2	Characteristics of residents as learners	3) Two main axes dividing residents' attitudes toward education on research competencies 4) Aiming to establish evidence that contributes to the development of Korean medicine and policy 5) Residents learning autonomously, coaching juniors, and teaching research to each other
3	Challenges in research and academic writing and solutions	6) "Once the fear is gone": Prioritizing the strengthening of research competencies to lower barriers to entry 7) Autonomy in choosing research topics is challenging when broad and disengaging when limited: finding the right level of autonomy 8) Distributing research and academic writing guidebooks and acquiring knowledge through common education for residents as a solution to the lack of time 9) A mutual exchange platform for sharing research and academic writing experiences: Establishing a cohesive atmosphere 10) Appropriate rewards and a cost support system to increase motivation 11) A work environment that allows focusing on research requires a separate period
4	Design and implementation of education on research competencies	12) Demand for competencies connecting the basics of research and academic writing to statistics, big data, and industry 13) "It would be good to have education related to topic selection as well" 14) Learning scope: Deep learning in a single field vs. broad learning across various fields 15) Education should be flexible, considering the workload and learning burden by year of training
5	Challenges in choosing a research career paths after residency	16) "The reality wall you actually hit": Barriers to choosing a research career path

2) **"If only I had learned about research in clinical fields during my undergraduate studies..." - Exposure to research during undergraduate studies can be beneficial for residents during their residency**

The survey findings revealed that 20–25% of residents had no previous experience in research and academic writing. For many, their first exposure to research and academic writing was during their residency, prompting them to start writing papers during this phase (Fig. 2, Supplement 2).

During the FGDs, significant variation was observed among participants in their undergraduate backgrounds in research and academic writing. While many had exposure through coursework and extracurricular activities, some lacked this education due to differences in university offerings. Engaging in extracurricular activities, such as paper reading, writing, and academic presentations, demonstrated significant benefits. However, limited access to clinical research in undergraduate

education was a key concern, suggesting that increasing such opportunities could enhance interest in pursuing residency training.

3. Characteristics of residents as learners

1) Two primary axes shaping resident attitudes toward research competency education

Residents generally expressed positive attitudes toward education in research competencies, recognizing it as beneficial for their careers. While many participated in overcoming academic writing challenges and enhancing research skills, some cited time constraints from other duties as a participation barrier (Supplement 3).

The interest of the residents in research and academic writing stemmed from various motivations. External motivations were significantly prevalent, while internal motivations were

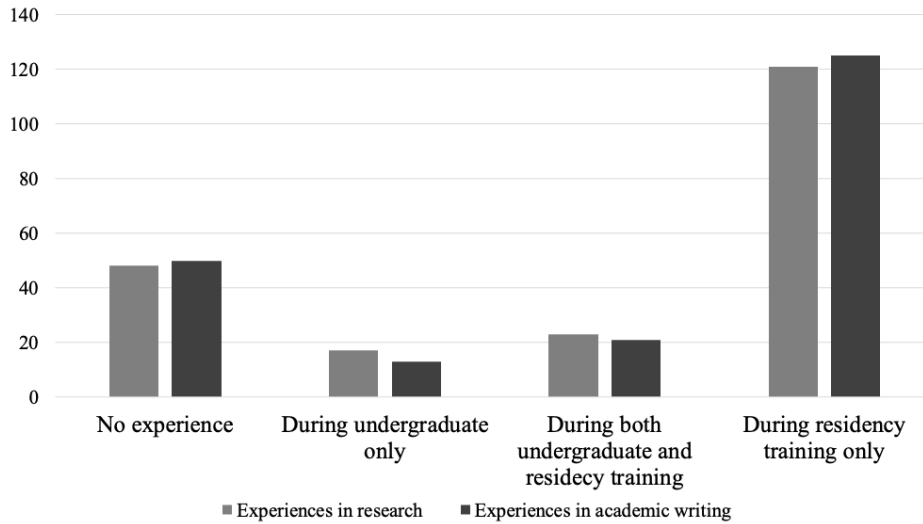


Figure 2. Experiences in research and academic writing.

comparatively lower (Supplement 4).

During the FGDs, residents acknowledged differing levels of interest in research and anticipated varied responses to research competency education based on individual traits. They highlighted the challenge of customizing mentoring and coaching methods to cater to diverse knowledge levels and research interests, suggesting categorizing residents into four types.

Participant 1: “When classifying residents nationwide, there seem to be two axes. One category is based on their interest in research, while the other pertains to their active involvement in conducting research or not.”

Individuals with a strong research interest may actively engage in self-directed learning even when provided education, while those lacking interest may view it as an added task, raising concerns.

2) Aiming to establish evidence for Korean medicine development and policy

The survey revealed that 37.8% of residents were motivated to engage in research to enhance the evidence for Korean medicine clinical practices, alongside internal and external motivations (Supplement 4). In the FGDs, residents expressed a desire to contribute to the evidence base for Korean medicine, anticipating potential policy changes and field expansion.

Participant 9: “I believe residents are interested in gaining additional insights that could further contribute to the future growth of Korean medicine.”

This motivation highlighted a preference for practice-based research networks (PBRNs) (29.19% of cases) (Supplement 8). Trainees recognized the importance of evidence in clinical practice and viewed PBRNs as a nexus for meeting the needs of researchers, clinicians, and patients. Clinical settings often lack evidence for the techniques and prescriptions employed, prompting clinicians to seek evidence-based treatments. Additionally, providing evidence can enhance the credibility of the clinics, facilitating patient trust in the treatments offered.

3) Autonomous learning, junior coaching, and peer teaching on research among residents

Trainees perceived the research competency education as inadequate and resorted to self-directed learning, using internet resources and peer coaching (Supplement 1).

Participant 8: “I often searched for resources online or through lectures and learned by examining previously published journal papers; I learned by following their structure and piecing things together on my own.”

Residents learned research and paper writing through trial and error, attending offline and online lectures outside the hospital. Additionally, they coached each other by sharing learning materials, papers, and reviewer comments with juniors. The Korean Medical Resident Intern Association developed projects to support research engagement.

Negative views suggested this situation could be detrimental

in a performance-driven context, while positive views observed any help could be beneficial. The sporadic nature of coaching and foundational knowledge gaps underscored the need for structured, systematic coaching in research skills.

4. Challenges in research and academic writing and solutions

1) “Once the fear is gone”: Strengthening research competencies to lower entry barriers should be prioritized

Residents believed that practicing writing papers could “eliminate the fear,” thereby increasing accessibility to research and paper writing. They emphasized the importance of prior experience or education, cautioning against “blindly jumping in” to research and paper writing unprepared. Residents identified fear, rather than a lack of time, as the primary obstacle to committing to paper writing.

Participant 7: “The lack of clarity and guidance on paper writing during my residency contributed to overwhelming fear and worry, making the writing process more challenging.”

2) Challenges and dynamics of autonomy in research topic selection: Finding the right autonomy level

The survey indicated that selecting a research topic was a significant challenge (49.28% of cases) (Supplement 5). FGDs revealed a dichotomy between selecting topics of personal interest and adhering to the “hospital’s preference” or specific topics.

Participant 3: “I had to conduct research and write a paper on a predetermined topic... leaving me with no autonomy over my research.”

Excessive autonomy in topic selection, coupled with insufficient background knowledge or interest, made it challenging to choose a topic, indicating the need for education on topic selection. Conversely, limited autonomy made it difficult to “derive a practically solvable research question” and could reduce motivation if the topic was uninteresting.

3) Distributing research and academic writing guidebooks and implementing common education for residents to address time constraints

In the survey, residents cited heavy workloads, lack of time,

and insufficient knowledge as significant challenges in conducting research and paper writing (Supplement 5).

Regarding these findings, a consensus in the FGDs emerged, indicating “a lack of knowledge leads to a lack of time.” Uncertainty about what to do, how to solve problems, or where to find information in research and academic writing makes these tasks more time-consuming and perceived as “cost-ineffective.”

In response, residents emphasized the need for customized research competency education for residents and expressed a high demand for a guidebook.

Participant 3: “If I asked my fellow residents, ‘How did you do this for your paper?’ and they could say, ‘Just look at that guide; it’s all there.’ I thought it would be nice to have such a universal resource.”

4) Creating a collaborative platform for sharing research and academic writing experiences: Facilitating a cohesive environment

A platform facilitating communication and mutual exchange among trainees was in demand. Residents observed that attempting to solve problems individually hindered experience accumulation and sharing. They highlighted the benefits of an environment fostering shared experiences, solutions, and communication among researchers and writers. Using an accessible platform could transform the current individual struggle into a collaborative environment where “everyone shares the burden.”

5) Appropriate rewards and cost support systems for enhanced motivation

Trainees highlighted the need for direct financial support for research, statistical support, and a rewards system. Despite some residents benefiting from incentives and subsidies for research-related expenses, challenges persist, especially in non-university hospitals lacking literature access enhancement. Additionally, high article processing charges reduce the appeal of international journal publications, highlighting the urgent need for financial aid, as multiple residents currently share these expenses. Coaching or outsourcing for precise statistical methods and data interpretation are also needed. Offering comprehensive support could increase research motivation and prioritize research endeavors.

6) Creating dedicated research time within the work environment

Residents expressed that their focus was often scattered due to other duties, even while engaged in research tasks. As a proposed solution, they suggested designating specific residents solely for research tasks, allocating a dedicated 3-month period annually for research endeavors, or scheduling specific times for engaging with research participants and conducting studies.

Participant 10: “It might be helpful for task distribution if residents could allocate specific times as dedicated research hours. Additionally, residents with heavier research workloads could adjust their schedules accordingly.”

5. Designing and implementing research competency education

1) Demand for competencies connecting research and academic writing basis to statistics, big data, and industry

The survey analysis revealed significant gaps across all areas between the current research competencies and educational needs of the residents. The most significant demand was for improving “statistical approaches and application,” followed by

“study design and outcome measurement” and “data integration.” Additionally, significant gaps were observed in “biomedical product development” and “health technology industrialization and entrepreneurship” (Fig. 3, Supplement 6).

Residents recognized the necessity for system improvements and education in biomedical product development competencies to apply new medical products effectively in clinical settings. Additionally, they highlighted challenges in health technology industrialization and entrepreneurship, such as the shortage of small-scale businesses and skilled workforces in Korean medicine. While emphasizing the significance of developing these competencies to expand the clinical field, some residents considered them more crucial for principal investigators than for residents, seeing them as optional rather than mandatory.

2) “It would be good to have an education related to topic selection as well.”

Residents expressed a desire for education on selecting research topics and questions as subjects they wanted to learn. Attending lectures on the latest clinical insights allowed them to adopt the perspective of the researcher and tackle problems from a “multidimensional” perspective.

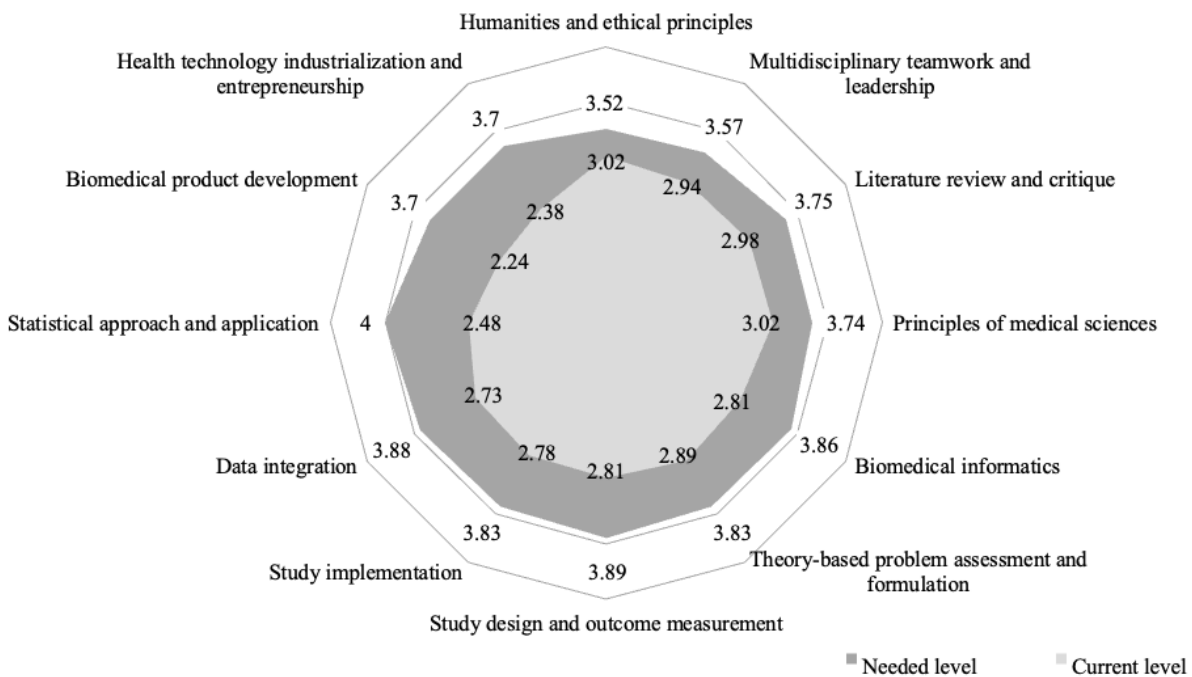


Figure 3. Gap between research competencies of residents.

Participant 5: “Understanding what areas someone is interested in and what previous research has been conducted in those areas will enable the conception of the research area.”

The survey examined topics residents wanted to learn to enhance their research competencies (Supplement 8). Among these, big data analysis specific to Korean medicine (47.85% of cases) and case study methodology (42.58% of cases) were highly preferred. In open-ended responses, residents showed enthusiasm for acquiring comprehensive and practical research skills to bolster their clinical research competencies. They expressed a desire for expanded education in several areas, including research ethics (communication with research participants and IRB training), research methods and design, paper writing from planning to publication, medical informatics, big data, and statistical analysis.

3) Learning scope: deep learning in a single field vs. broad learning across various fields

The survey results showed that residents predominantly wrote case reports (53.11%), followed by systematic reviews (33.01%) and literature reviews (29.67%), with fewer engaging in original papers (Supplement 7).

Residents demanded tracks for in-depth learning in specific research areas. They believed that “three years is not enough to properly do just one research methodology.” They suggested that basic content corresponding to an introduction should be included in the common course with subsequent division into tracks based on research methods.

Participant 5: “Focusing solely on a case study, randomized controlled trial (RCT), or SR, and completing the research design for a paper could take the entire residency period, which raises doubts about its feasibility.”

This approach offers a deeper understanding of research, autonomy in topic selection based on assigned tasks, and the opportunity to explore diverse research foundations initially.

However, residents also demanded comprehensive learning across various research methodologies. Suggestions included organizing the educational program to produce annual outcomes, such as writing a case report in the first year, conducting an RCT in the second year, and writing a big data paper in the third year. This educational model offers benefits such as early exposure to research and case reporting during the internship,

facilitating the gradual accumulation of experience from basic to complex papers.

Participant 11: “I believe structuring the educational program to produce at least one paper outcome annually, organized by topics and years, would be more beneficial.”

4) Flexible education: Considering workload and learning burden across training years

The education timing should align with the workloads of the residents, adjusting for varying burdens related to patient management onwards during different training phases and specialties. Significant workload differences, especially between interns and first-year residents, highlight the necessity of flexible educational scheduling. Heavy workloads can hinder learning, while lighter workloads offer opportunities for intellectual stimulation.

Participant 2: “In the long term, it’s clearly necessary... It seems good, but looking back, the intern year was the busiest with the most work, and now it seems like a practical issue.”

The findings suggest integrating research education during residency transitions, such as between internship and first year and between first and second years, to prepare for research earlier. A consensus was reached that the third year, nearing the specialist exam, gives no room for a “full year” of extensive research.

Most trainees (55.02%) preferred offline weekend education close to their training hospitals (76.08%) (Supplement 9). For teaching and assessment methods, written exams (48.33%) and e-learning (46.41%) were top choices, along with mentoring and lectures, which were popular (Supplement 10).

6. Challenges in selecting a research career path post-residency

1) “The reality wall you actually hit”: Barriers to career research pathways

Residents encounter external barriers when considering a research career, including scarce job opportunities and inadequate compensation. These factors prompt some to abandon research paths, particularly due to heavy workloads in rural areas and financial uncertainties. Residents expressed a preference for research roles with guaranteed salaries for two years, express-

ing concerns about committing to irreversible career paths. Life events such as marriage, childbirth, and military service during the early to mid-30s age range raised concerns about the opportunity costs of research. Restricted social environment during training limited post-residency career exploration. Trainees believed mentoring programs exposing them to various career paths, including research, would have fostered interest in different career options.

The survey examined the career aspirations of the residents and their inclination to pursue research post-completion (Supplement 11). The results showed moderate interest in post-residency research (3.38 ± 1.00), with a preference for salaried clinical practice position (58.17%) or private practice (21.15%). However, career interests shifted slightly towards academic and research roles if career stability could be guaranteed.

DISCUSSION

This study identified critical insights into research competency education needed by interns and residents in Korean medicine using a mixed-method approach. The findings highlight the universal requirement for tailored education programs that address knowledge gaps and adapt to diverse training environments across different institutions. The study shows a significant interest in PBRNs, indicating a latent desire among trainees to contribute to the evidence base of Korean medicine. This highlights the need to incorporate accessible, multifaceted educational content and methods into training curricula to create a conducive learning environment.

Lack of time and knowledge emerged as the primary barriers, consistent with previous studies [17, 18]. Competence was identified as a key motivational factor, aligning with the findings of previous studies [19, 20]. Focused knowledge delivery through educational programs, guidebooks [21], and accessible online and offline formats within training hospitals is essential. Educational content should cover research topics such as big data, biomedical products, and entrepreneurship. Additionally, developing educational programs on statistical methods common in Korean medicine research, such as t-tests and ANOVA, using software such as SPSS or Jamovi, presents a valuable approach [22, 23].

Offering learner-centered education is imperative. Trainees can be categorized into four types based on their research inclination and involvement, highlighting the potential for tailored coaching aligned with their motivational profiles guiding their

mentors.

Autonomy, a cohesive atmosphere, and intrinsic motivation are pivotal for resident engagement in research. Creating a platform for the research community will enable trainees to collaborate on research. Supporting autonomy in selecting research topics and providing options will enhance participation and motivation. Furthermore, research rotations, focused periods, and support systems, including cost coverage and publication incentives, will further motivate research efforts.

Furthermore, residents demonstrated a strong motivation to contribute to academic advancement, similar to the self-directed learning attitudes of some students at Korean medicine colleges [24]. Securing quality jobs post-residency and providing research career mentoring will be crucial for developing human resources in Korean medicine research.

A mixed-method design was employed in this study to thoroughly investigate the education needs of the residents on research competencies in Korean medicine nationwide, offering insights with high generalizability for national education programs. This highlights the potential application of SDT to motivate learners supporting policy-making and curriculum development.

However, the insights from this study are limited to Korean medicine trainees and may not directly apply to other fields or cultures. Additionally, self-reported gap analysis could introduce subjective bias. Despite observing significant differences among learners and educational environments, a deeper analysis based on individual learner characteristics is lacking.

Future research endeavors should prioritize the design, development, and evaluation of customized education programs targeting interns and residents, guided by the findings of this study. Validating the categorization of resident research motivation types and conducting detailed analyses based on individual learner traits are imperative to refine education, mentoring, and coaching strategies. Furthermore, research bridging BME and GME in research competencies is needed.

CONCLUSION

This study emphasizes the necessity of tailored research competency education for Korean medicine interns and residents. This highlights time constraints and knowledge gaps as significant challenges and suggests accessible, interest-based educational approaches supported by motivational, coaching, and supportive strategies. The findings emphasize the need to

establish education initiatives for research competencies, creating a lasting framework for Korean medicine interns and residents.

ACKNOWLEDGEMENTS

We express our sincere gratitude to the Korean Medical Resident Intern Association for their assistance with our survey distribution and to the medical residents who participated in our Focus Group Discussions. Their contributions have been invaluable to our research.

AUTHORS' CONTRIBUTIONS

MHK originally conceived the study. ML, MHK developed and conducted surveys and questions and ML analyzed the data. ML drafted the original manuscript. All authors edited and revised the manuscript. All authors reviewed the manuscript.

DATA AVAILABILITY

The data supporting this study's findings are available from the corresponding author upon reasonable request.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest in this work.

FUNDING

This work was supported by a grant from the Woosuk University College of Korean Medicine.

SUPPLEMENTARY MATERIALS

Supplementary data is available at <https://doi.org/10.3831/KPI.2024.27.2.142>.

ORCID

Min-jung Lee, <https://orcid.org/0000-0001-6372-2201>
Myung-Ho Kim, <https://orcid.org/0000-0003-2320-1633>

REFERENCES

1. Kim M, Kim MH, Lee M, Jang D, Park SY. Survey and suggestions on the educational and research environment of graduate students of Korean medicine: focusing on fostering of KMD-scientist. *J Korean Med.* 2023;44(3):59-73.
2. Ministry of Health and Welfare. Curriculum for Yearly Training of Residents, Ministry of Health and Welfare Notice No. 2024-109 [Internet]. Sejong: Ministry of Health and Welfare; 2024 Mar 1 [cited 2024 Mar 10]. Available from: [https://www.law.go.kr/%ED%96%89%EC%A0%95%EA%B7%9C%EC%B9%99/%EC%A0%84%EA%B3%B5%EC%9D%98%EC%9D%98%20%EC%97%B0%EC%B0%A8%EB%B3%84%20%EC%88%98%EB%A0%A8%EA%B5%90%EA%B3%BC%EA%B3%BC%EC%A0%95/\(2024-109,20240301\)](https://www.law.go.kr/%ED%96%89%EC%A0%95%EA%B7%9C%EC%B9%99/%EC%A0%84%EA%B3%B5%EC%9D%98%EC%9D%98%20%EC%97%B0%EC%B0%A8%EB%B3%84%20%EC%88%98%EB%A0%A8%EA%B5%90%EA%B3%BC%EA%B3%BC%EC%A0%95/(2024-109,20240301)).
3. Yoon HB, Park DJ, Shin JS, Ahn C. Developing a core competency model for translational medicine curriculum. *Korean J Med Educ.* 2018;30(3):243-56.
4. Granat LM, Weinstein A, Seltzer E, Goldstein L, Mihlbachler M, Chan T, et al. Developing future academic physicians: the academic medicine scholars program. *Med Sci Educ.* 2020;30(2):705-11.
5. Boston University Chobanian & Avedisian School of Medicine: Internal Medicine Residency Program. Promotion of Research in Medical Residency [Internet]. Boston (MA): Boston University; 2022 Sep 23 [cited 2024 Mar 10]. Available from: <https://www.bumc.bu.edu/im-residency/research-2/promotion-of-research-in-medical-residency/>.
6. Michigan Medicine, University of Michigan: Emergency Medicine. Professional Development Tracks [Internet]. Ann Arbor (MI): Michigan Medicine, University of Michigan; 2021 Sep 23 [cited 2024 Mar 10]. Available from: <https://medicine.umich.edu/dept/emergency-medicine/education/residency-program/professional-development-tracks>.
7. Murphy B. Value of Medical Student Research Extends Beyond Career Planning [Internet]. Chicago (IL): AMA; 2022 Oct 5 [cited 2024 Mar 10]. Available from: <https://www.ama-assn.org/medical-students/preparing-residency/value-medical-student-research-extends-beyond-career-planning>.
8. Estrada L, Williams MA, Williams CS. A competency-guided approach to optimizing a physician-scientist curriculum. *Med Sci Educ.* 2022;32(2):523-8.
9. Kellenberg F, Schmidt J, Werner C. The adult learner: self-determined, self-regulated, and reflective. *Signum Temporis.* 2017;9(1):23-9.
10. Ryan RM, Deci EL. Overview of self-determination theory: an organismic-dialectical perspective. In: Deci EL, Ryan RM, editors. *Handbook of self-determination research*. Rochester (NY):

- University of Rochester Press; 2002. p. 3-33.
11. Grant J. Learning needs assessment: assessing the need. *BMJ*. 2002;324(7330):156-9.
 12. Vallerand RJ, Pelletier LG, Blais MR, Brière NM, Senecal C, Vallières EF. On the assessment of intrinsic, extrinsic, and amotivation in education: evidence on the concurrent and construct validity of the Academic Motivation Scale. *Educ Psychol Meas*. 1993;53(1):159-72.
 13. Ornelles C, Ray AB, Wells JC. Designing online courses in teacher education to enhance adult learner engagement. *Int J Teach Learn High Educ*. 2019;31(3):547-57.
 14. Merino T, Rojas V, Fuentes-López E, Sánchez C, Pizarro M, Fuentes-Cimma J, et al. Barriers for research activities in residency programs: a mix-methods study. *Medwave*. 2023;23(1):e2627.
 15. Dennis M, Batalini F, Demers L, Upadhyay A. Overcoming barriers to resident scholarly productivity and research at a large academic institution. *MedEdPublish* (2016). 2019;8:213.
 16. Nyumba TO, Wilson K, Derrick CJ, Mukherjee N. The use of focus group discussion methodology: insights from two decades of application in conservation. *Methods Ecol Evol*. 2018;9(1):20-32.
 17. Alhaider S. Use of a needs assessment tool for the development of research curriculum for postgraduate medical education trainees in King Faisal Specialist Hospital and Research Centre (KFSH&RC) [master's thesis]. Calgary: University of Calgary, Calgary; 2013. 98 p.
 18. Hall J, Wardian JL, Marcelin JR. Scholarly activity in residency: a needs assessment of challenges and proposed solutions. *Grad Med Educ Res J*. 2022;4(1):Article 3.
 19. Midford S, James S, Kanjere A. Understanding the commencing student mindset to better support student success: a typology of first-year students' motivation, preparedness and perceived support. *J Univ Teach Learn Pract*. 2023;20(3):Article 8.
 20. Weidner A, Gilles R, Seehusen DA. Residency scholarship within practice-based research networks. *Fam Med*. 2020;52(2):91-6.
 21. Chae H. Practical guide for writing article in medicine. Busan: PNU Press; 2014.
 22. Chae H. Jamovi, an open-source software for teaching data literacy and performing medical research. *J Korean Med Educ*. 2023;1(2):28-36.
 23. Lee Y, Kwak MJ, Jung H, Ha H, Chae H. A study on the statistical methods used in KCI listed Journals of Traditional Korean Medicine from 1999 to 2008. *Korea J Orient Med*. 2012;18(2):55-64.
 24. Hwang I, Park M, Lee J, Chi GY, Kim S, Kwon C. A qualitative study on the factors of satisfaction and dissatisfaction of Korean medical college students in classes of pre-Korean medicine. *J Korean Med Educ*. 2023;1(2):50-62.