Barriers and Perceptions Regarding Research Among Ophthalmology Residents in Thailand: A Descriptive Study

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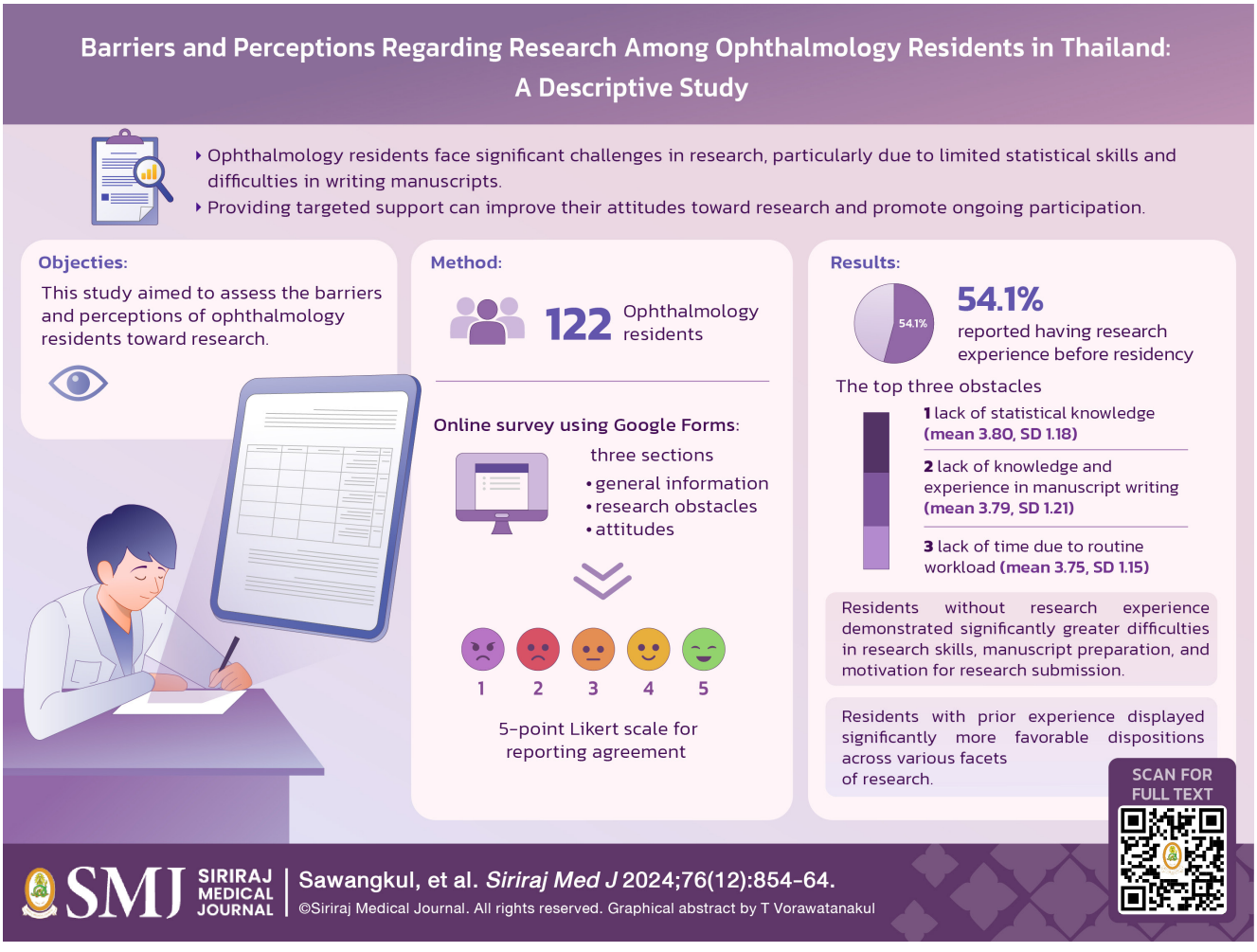

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ABSTRACT

Objective: This study aimed to assess the barriers and perceptions of ophthalmology residents toward research and to discern the differences between residents with and without prior research experience before commencing ophthalmology training.

Materials and Methods: An online survey using Google Forms was conducted to collect data. The survey comprised three sections: general information, research obstacles, and attitudes. Participants utilized a 5-point Likert scale for reporting agreement.

Results: The survey was completed by 122 ophthalmology residents, representing a 51.3% response rate. Among them, 54.1% reported having research experience before residency. The top three obstacles identified were "lack of statistical knowledge" (mean 3.80, standard deviation 1.18), "lack of knowledge and experience in manuscript writing" (mean 3.79, SD 1.21), and "lack of time due to routine workload" (mean 3.75, SD 1.15). Residents without research experience demonstrated significantly greater difficulties in research skills, manuscript preparation, and motivation for research submission. While overall research attitudes were positive (mean 3.20, SD 1.18), residents with prior experience displayed significantly more favorable dispositions across various facets of research. These were preferences, perceived educational and career advantages, potential for income generation, and enhancement of communication skills. Conversely, the non-experienced residents primarily viewed research as a graduation requirement.

Conclusion: Ophthalmology residents encountered considerable challenges in conducting research, primarily stemming from limited statistical knowledge and inadequate competency in manuscript writing. Implementing targeted support measures to address these barriers can foster positive research attitudes and encourage sustained research engagement among residents.

Keywords: Attitudes; Obstacles; Ophthalmology; Research; Residency training (Siriraj Med J 2024; 76: 854-864)

INTRODUCTION

The ophthalmology residency training program, overseen by the Royal College of Ophthalmologists of Thailand and the Medical Council of Thailand, aims to provide resident trainees with comprehensive qualifications and knowledge.[1] This is accomplished through the development of six core competencies: patient care, medical knowledge and procedural skills, interpersonal and communication skills, practice-based learning and improvement, professionalism, and systems-based practice. An essential element of this higher education is residents' engagement in research, which not only generates new knowledge but also nurtures creativity, hones analytical skills, and facilitates the integration of information. Furthermore, research provides an opportunity to integrate medicine with other scientific domains while maintaining professional ethics.

The ability to independently conduct research is a critical competency expected to be attained by ophthalmology residents during their tenure in the program. Residents must participate as primary investigators or co-investigators in at least one research project. While the requirement to undertake research is obligatory, motivations for engaging in research extend beyond mere compliance. These incentives include a genuine interest in discovery and learning[2], a passion for scholarly inquiry, an aspiration for skill enhancement and professional growth, a desire to improve patient care[3], the pursuit of higher education, and the opportunity to establish professional connections. Like their counterparts across specialties and nations, ophthalmology residents in Thailand frequently encounter challenges while conducting research. The extant literature pinpoints several key hindrances: time constraints due to heavy clinical workloads[3,4]; inadequate skills and knowledge in areas such as statistics[5] and research methodology; and limited prior research experience.[6] Additional obstacles include insufficient research support; limited access to research equipment, facilities, and expert consultancy; difficulties obtaining and interpreting biostatistical data; and the complexities of securing approvals from human research ethics committees.[5-7]

Conversely, a study in Thailand focusing on radiology residents showed that the support and guidance provided by advisors fostered a highly positive attitude toward research during training.[8] These findings suggest that the obstacles and attitudes toward research can differ across specialties and regions. Therefore, this study aimed to investigate the barriers to and attitudes toward research within the context of ophthalmology residency in Thailand.

There are many ophthalmology resident training centers in Thailand provided training in research skills, such as research methodology, biostatistics, and manuscript writing. They also organized activities to promote research, like Research contests and Research quality fairs, which allowed researchers to share knowledge and experiences. In addition, some centers offered research funding, including grants for presenting work abroad.

Additionally, this study aimed to delineate the disparities in these factors between residents with and without research experience before commencing their residency. The insights garnered from this study will inform enhancements to the research framework of ophthalmology residency programs in Thailand, ensuring their adaptability to future challenges.

MATERIALS AND METHODS

The study protocol received approval from the Ethics Committee of the Siriraj Institutional Review Board (approval number Si-492/2022). This descriptive study was executed during the 2022 academic year. All 238 ophthalmology residents registered with the Royal College of Ophthalmologists of Thailand were included. Informed consent was obtained by requiring all respondents to answer the acceptance checkbox, before being included in the study.

Data collection instrument

The study utilized an online questionnaire developed using Google Forms. The development of the instrument was informed by an extensive review of the pertinent literature and the incorporation of feedback from residents about their research experiences. Four research advisors carefully reviewed and revised the questionnaire. To ensure efficacy, a pilot test was also conducted. The questionnaire comprised three parts:

- Part 1: Demographic information and research background (10 items). This section collected data on sex, age, current training status, institution, research training, research experience, number of ongoing research projects, average weekly research time, types of research projects, and research designs.
- Part 2: Obstacles to conducting research (23 items). This section explored challenges in six domains: scheduling meetings with a preceptor, proposal development, data collection, data analysis, manuscript writing, and article submission processes.
- Part 3: Attitudes toward research (20 items). This section assessed participants' attitudes toward research.

Measurement levels

The study utilized 5-point Likert scales in Part 2 (obstacles to conducting research) and Part 3 (attitudes toward research).[9,10] Participants rated their responses using the following options: 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," and 5 = "strongly agree." These response choices facilitated the assignment of quantitative scores to the opinions expressed by respondents. The mean scores were interpreted as follows: 1.00–1.50 = strong disagreement, 1.51–2.50 = disagreement, 2.51–3.50 = neutral, 3.51–4.50 = agreement, and 4.51–5.00 = strong agreement.[10]

Data collection

The data were collected via an online questionnaire that was made available to the research coordinators of 11 ophthalmology training centers across Thailand. The institutions involved were Chiang Mai University, Chulalongkorn University, Khon Kaen University, Mahidol University (Ramathibodi and Siriraj Hospitals), Mettapracharak (Wat Rai Khing) Hospital, Navamindradhiraj University, Phramongkutklao College of Medicine, Prince of Songkla University, Rajavithi Hospital, and Thammasat University.

The research coordinators distributed the questionnaire to ophthalmology residents within their respective institutions by sharing a Google Form link. The data collection period ranged from October 2022 to February 2023. Participants had one month to complete the questionnaire. A reminder email was sent to participants who had not completed the questionnaire by each institution's coordinator one week before the due date. After this interval concluded, the responses were collected and analyzed.

Data analysis

Descriptive statistics were employed to summarize the data. Categorical variables are expressed as frequencies and percentages, while continuous variables are reported as means and standard deviations (SDs). The Mann–Whitney U test was used to assess differences in obstacles and attitudes toward research between residents with and without research experience before commencing the ophthalmology residency training program. A *P* value less than 0.05 indicated statistical significance. All the statistical analyses were conducted using PASW Statistics, version 18 (SPSS Inc, Chicago, IL, USA).

Definitions

- **Conducting Research:** From the preparation of the research proposal to the conclusion of the study, the activities that may occur include revising

the research proposal, IRB submission, collecting data, analyzing data, and summarizing the research results, etc.

- **Research Experience:** Research projects or research work carried out prior to entering the ophthalmology residency program, such as research activities during internships, thesis work, etc.
- **Participation in Research:** Participation in research may include roles such as Principal Investigator or Co-Investigator, or it may involve contributing to the research in other ways, such as collecting and analyzing data, even if one is not named in the proposal.
- **Manuscript Writing:** This was the final step in the research process, which took place after the research was completed. Writing a manuscript and presenting research results and abstracts were mandatory for ophthalmology residents to successfully complete the training program.
- **Submitting Research Papers:** This was one step in conducting research. In this study, it meant submitting research papers for academic contests. This step was not mandatory for ophthalmology residents to complete their training program.

RESULTS

Participant demographics and research backgrounds

Of the 238 eligible residents, 122 responded to the survey, yielding a response rate of 51.3%. The majority were female (71.3%), and most residents (82.8%) were between the ages of 24 and 29. Additionally, 33.6%, 27.9%, and 36.1% of the respondents were the first-, second-, and third-year residents, respectively (Table 1).

There were a total of 11 ophthalmology residency training institutions. The top three institutions in terms of response rates were the Faculty of Medicine Siriraj Hospital, Mahidol University (26.2%); the Faculty of Medicine, Chiang Mai University (21.3%); and the Faculty of Medicine Vajira Hospital, Navamindradhiraj University (9.8%). These three institutions had response rates that represented one hundred percent of the total number of residents at their respective institutions (Table 1).

Over half of the respondents (54.1%) had received research training before their residency, and 46.7% had conducted research. During their residency, a notable proportion (62.3%) were involved in one research project. Most respondents (83.6%) allocated between 0 and 7 hours per week to research activities (Table 1).

Participants with prior research experience had engaged in various types of studies before entering the residency. The most common types were retrospective chart reviews (37.5%), prospective cohort studies (19.6%), and questionnaire-based research (11.4%). The predominant research designs were descriptive (30.3%), cross-sectional (21.9%), and prospective cohort (15.2%) (Table 2).

Obstacles to research engagement

The research barriers were classified into six domains. Manuscript writing emerged as the most challenging aspect (mean ± SD: 3.68 ± 1.13). This was followed by data analysis (3.12 ± 0.95), the submission of research papers for academic conferences (2.81 ± 0.88), and proposal development (2.76 ± 0.78). These four areas were considered to present moderate levels of difficulty. Data collection (2.44 ± 1.02) and scheduling meetings with a preceptor (1.95 ± 0.84) were perceived as relatively less challenging (Fig 1).

In descending order of impact, the three primary obstacles were "lack of statistical knowledge" (3.80 ± 1.18), "lack of knowledge and experience in manuscript writing" (3.79 ± 1.21), and "lack of time due to routine workload" (3.75 ± 1.15; Table 3).

Significant disparities were found in the perceptions of the residents with and without prior research experience. The residents lacking experience reported greater difficulties with the following:

- Developing proposals, due to limited research knowledge and experience ($P = 0.002$).
- Writing manuscripts, hindered by a lack of experience ($P < 0.001$) and difficulties in composing manuscripts accurately in English ($P = 0.004$)
- Finding the motivation to submit research papers for academic contests ($P = 0.007$).

Conversely, both groups shared similar views regarding preceptor appointments, data collection, and statistical analysis (Table 3).

Attitudes toward research

The residents' attitudes toward research were predominantly positive. Their mean scores indicated a strong recognition of the importance of conducting research for their academic progress (mean ± SD: 4.30 ± 0.81). They also reported that mentorship from their preceptors facilitated their research (4.12 ± 0.91). Additionally, they highlighted the need for training in research methodologies (3.86 ± 0.93) (Table 4).

Notable differences emerged between residents with and without prior research experience. These included their enthusiasm for conducting research ($P = 0.01$), undertaking research primarily for graduation purposes ($P = 0.03$), valuing research for educational and career advancement ($P = 0.03$), aspirations to publish in academic

TABLE 1. Demographic information and research experience of participants (n=122).

	n (%)
Sex	
Female	87 (71.3)
Male	35 (28.7)
Age (years)	
24-29	101 (82.8)
30-35	21 (17.2)
Year of in-training	
First	41 (33.6)
Second	34 (27.9)
Third	44 (36.1)
Fourth	3 (2.4)
Institute	
Faculty of Medicine Siriraj Hospital, Mahidol University (Total Residents, n=32)	32 (26.2)
Faculty of Medicine, Chiang Mai University (n=26)	26 (21.3)
Faculty of Medicine Vajira Hospital, Navamindradhiraj University (n=12)	12 (9.8)
Mettapracharak (Wat Rai Khing) Hospital (n=19)	11 (9.0)
Rajavithi Hospital (n=21)	9 (7.4)
Faculty of Medicine, Khon Kaen University (n=24)	7 (5.7)
Faculty of Medicine, Thammasat University (n=20)	7 (5.7)
Faculty of Medicine Ramathibodi Hospital, Mahidol University (n=20)	6 (4.9)
Faculty of Medicine, Prince of Songkla University (n=20)	6 (4.9)
Faculty of Medicine, Chulalongkorn University (n=30)	4 (3.3)
Phramongkutklao College of Medicine (n=14)	2 (1.6)
Research experiences	
Did you receive any research training prior to attending ophthalmology residency training?	
Yes	66 (54.1)
No	56 (45.9)
Did you have any research-conducting experience before attending ophthalmology residency training?	
Yes	57 (46.7)
No	65 (53.3)
Total number of current research projects (in progress)	
0	10 (8.2)
1	76 (62.3)
2	25 (20.5)
3	11 (9.0)
The average research time (hour/week) during training	
0-7	102 (83.6)
8-15	20 (16.4)

TABLE 2. The types and designs of research conducted by residents prior to their ophthalmology training (n=122).

	n (%)
Research types	
Retrospective (chart) review	69 (37.5)
Prospective (cohort) study	36 (19.6)
Questionnaire-based research	21 (11.4)
Case series/ Case reports	16 (8.7)
Drug trial	9 (4.9)
Medical device trial	7 (3.8)
In vitro/ laboratory-based study	4 (2.2)
Research using repository of biological products (cells, blood, tissues, fluids, etc.)	4 (2.2)
Epidemiology research	3 (1.6)
Bioequivalence	1 (0.5)
Vaccine trial	-
Others	8 (4.3)
Not applicable	6 (3.3)
Research designs	
Descriptive study	54 (30.3)
Cross-sectional study	39 (21.9)
Prospective cohort study	27 (15.2)
Randomized-controlled trial	22 (12.4)
Pilot study	10 (5.6)
Pre-experimental study (manipulation only, without control and randomization)	8 (4.5)
Quasi-experimental study (manipulation and control only, without randomization)	3 (1.7)
Others	9 (5.0)
Not applicable	6 (3.4)

Note: In this section, respondents were able to select multiple answers.

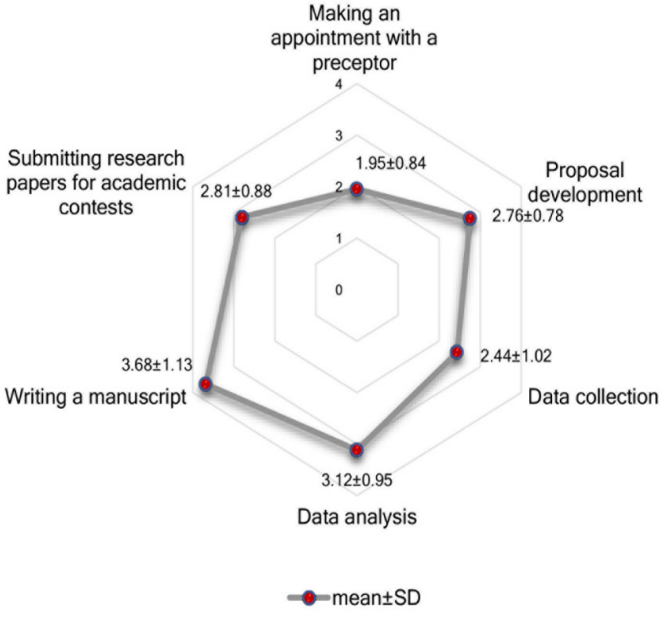

Fig 1. The mean and standard deviation values of the six domains related to research obstacles (n=122). SD: standard deviation.

TABLE 3. Obstacles in conducting research.

	Mean±SD Total (n=122)	With research experience (n=57)	Without research experience (n=65)	*P* *
1. Making an appointment with a preceptor				
1.1) Difficulty in making an appointment	2.26±1.18	2.44±1.19	2.11±1.15	0.11
1.2) Lack of mentorship support	1.84±1.01	1.72±1.01	1.94±0.99	0.14
1.3) Lack of interaction and communication skills	1.76±0.92	1.75±0.95	1.77±0.89	0.85
2. Proposal development				
2.1) Research topic misaligned with personal interest	2.33±1.09	2.32±1.21	2.34±1.08	0.92
2.2) Insufficient research experience and knowledge	3.65±1.23	3.25±1.35	4.00±1.00	0.002
2.3) Lack of funding support	2.34±1.18	2.44±1.25	2.26±1.12	0.56
2.4) Difficulty in obtaining approval from Institution Review Board (IRB)	2.20±1.05	2.19±1.19	2.20±0.92	0.59
2.5) Retrieving information or access to the institution's online database has difficulty	2.27±1.22	2.16±1.24	2.37±1.21	0.27
2.6) Lack of personnel to help conduct research	2.80±1.22	2.75±1.26	2.83±1.19	0.68
2.7) Lack of time due to routine workload	3.75±1.15	3.79±1.22	3.72±1.08	0.51
3. Data collection				
3.1) The process of requesting the use of a patient's medical records and statistics is complex	2.41±1.17	2.37±1.22	2.45±1.13	0.65
3.2) Difficulties in tracking volunteers to participate in research	2.56±1.29	2.49±1.27	2.62±1.33	0.64
3.3) Lack of research equipment and tools	2.35±1.22	2.44±1.23	2.28±1.22	0.46
4. Data analysis				
4.1) Lack of statistical knowledge	3.80±1.18	3.61±1.25	3.97±1.10	0.11
4.2) Extended wait times for consultations with a statistician	2.68±1.18	2.81±1.22	2.57±1.15	0.23
4.3) Difficulty in expressing research concepts to statisticians	2.87±1.15	2.95±1.19	2.80±1.12	0.44
5. Writing a manuscript				
5.1) Lack of knowledge and experience in manuscript writing	3.79±1.21	3.33±1.30	4.18±0.97	<0.001
5.2) Difficulty in writing accurate English manuscripts	3.57±1.27	3.19±1.38	3.91±1.06	0.004
6. Submitting research papers for academic contests				
6.1) Lack of motivation to submit research papers	3.37±1.14	3.09±1.06	3.62±1.16	0.007
6.2) Lack of confidence in one's own research	3.10±1.15	2.93±1.15	3.25±1.13	0.12
6.3) Lack of support from the department/faculty	2.28±1.12	2.23±1.07	2.32±1.17	0.69
6.4) Lack of support from The Royal College of Ophthalmologists of Thailand	2.39±1.13	2.39±1.08	2.40±1.17	0.89
6.5) Difficulties in the submission process	2.89±1.06	2.77±1.07	3.00±1.05	0.18

Notes: With research experience: This group had experience in research before attending ophthalmology residency training. Without research experience: This group had no experience in research before attending ophthalmology residency training. *Mann-Whitney U test ($P < 0.05$ is significant). SD: Standard deviation.

TABLE 4. Attitudes toward research.

	Mean±SD			
	Total (n=122)	With research experience (n=57)	Without research experience (n=65)	*P* *
Conducting research is challenging	3.73±1.05	3.74±0.97	3.72±1.13	0.79
I like to do research	2.38±1.06	2.67±1.14	2.12±0.93	0.01
I conduct research for graduation	4.30±0.81	4.12±0.87	4.45±0.73	0.03
Conducting research provides benefits to volunteers, professionals, and society	3.78±0.85	3.77±0.93	3.78±0.78	0.97
Research encourages self-learning	3.50±0.97	3.58±0.94	3.43±1.00	0.45
The mentorship from preceptors facilitated my research	4.12±0.91	4.18±0.87	4.08±0.96	0.65
I have enough time to conduct research	2.41±0.95	2.46±1.00	2.37±0.91	0.79
Research is helpful for me in pursuing higher education or advancing my career.	3.43±0.97	3.65±0.94	3.25±0.97	0.03
I have a good knowledge of research	2.46±0.90	2.60±0.86	2.34±0.92	0.15
Conducting research makes me create new ideas	3.06±1.02	3.14±0.99	2.98±1.04	0.44
Research skills training is a necessity	3.86±0.93	3.82±0.91	3.89±0.95	0.58
I do research for publication	3.12±1.03	3.32±0.99	2.95±1.04	0.03
Conducting research gives me more earnings	1.82±0.91	2.11±1.03	1.57±0.71	0.002
Research funding helps to conduct research more successfully and valuable	3.48±1.04	3.56±1.09	3.40±0.99	0.24
Conducting research improves interaction and communication skills	3.30±0.94	3.49±0.91	3.12±0.94	0.04
Conducting research makes me think systemically	3.51±0.92	3.61±0.90	3.42±0.93	0.29
A culture that promotes research	3.07±1.09	3.16±1.19	2.98±1.01	0.32
Lack of motivation in conducting research	3.41±1.07	3.23±1.07	3.57±1.05	0.09
Conducting research disturbs my personal time	3.58±0.91	3.60±0.99	3.57±0.83	0.74
I want to change my preceptor	1.84±1.08	1.82±1.09	1.85±1.08	0.94

Notes: With research experience: This group had experience in research before attending ophthalmology residency training. Without research experience: This group had no experience in research before attending ophthalmology residency training. *Mann-Whitney U test ($P < 0.05$ is significant). SD: Standard deviation.

journals ($P = 0.03$), perceiving research as a means to increase earnings ($P = 0.002$), and viewing it as an avenue to improve interaction and communication skills ($P = 0.04$). Conversely, in areas such as the perception of research as challenging, the recognition of the importance of research training, and the inclination to change research advisors, the attitudes of both groups were comparable (Table 4).

DISCUSSION

This study identified challenges faced by ophthalmology residents that hindered their research efforts, such as high clinical workloads, insufficient statistical knowledge, and difficulties in manuscript writing. Most residents considered research essential for graduation and believed that supervisor guidance would improve their research during residency. Training in research knowledge was

also viewed as important. These challenges particularly impacted residents without prior research experience, including a lack of exposure to research methodology, difficulties in writing English manuscripts, and reduced submission motivation. Despite these issues, both groups maintained positive attitudes toward research.

Several common barriers were identified for participants with and without prior research. These were a limited understanding of statistical concepts, difficulties in selecting appropriate statistical methods for medical research, time constraints due to routine clinical responsibilities, and a lack of experience in conducting research. These impediments are consistent with previous international studies[11-17], which consistently point to the lack of research training and time as major barriers to conducting research.

The residents' heavy clinical responsibilities, which include patient care, treatment, and educational activities, likely contribute to their limited availability for research. A Canadian study[3] suggested that allocating protected time for research and integrating research-related activities into the curriculum, such as designated research days, may address these temporal barriers effectively.

In India, Shaik et al.[16] found that ophthalmology residents lacked guidance in participating in research activities, which led to their failure to engage in such activities. Additionally, there was a problem with insufficient research funding, which contrasts with the results of this study. Most ophthalmology residents in Thailand did not perceive a lack of research funding, possibly because they received guidance and support from department or institutional staff.

In the study by Al Saeed et al.[17], it was found that ophthalmology residents faced problems with the ethics approval process. There were too many requirements, which resulted in long approval times. In contrast, the results of this study showed that most ophthalmology residents in Thailand encountered few issues with the ethics approval process. We believe that the speed of ethics approval may depend on the details and complexity of each project, as well as differences in the approval processes of ethics committees in each country.

The ophthalmology residents in our study reported having significant difficulties writing manuscripts, primarily due to limited knowledge and experience in this skill set. This challenge was compounded by limited proficiency in English, which is not their native language. These findings align with the challenges reported by anesthesiology residents in Thailand[6]. Implementing specialized English language lessons focused on manuscript writing and providing resources for grammatical corrections could be instrumental in addressing the language obstacles.

In contrast to the frequent worldwide reports of difficulty scheduling appointments with preceptors[7,12,13,17], our findings indicated that this issue was relatively minimal in Thailand. This finding suggests that the ophthalmology residents received adequate support from their preceptors in their research endeavors. This observation may be attributed to the demonstrably caring nature of Thai preceptors, who tend to closely mentor their residents and take great pride in their students' academic achievements. Furthermore, Ballard et al. emphasized the value of mentorship in residency research, highlighting the need for advisors who can guide, assist with challenges, and inspire residents during their training.[18] The supportive environment fostered by Thai preceptors may contribute to the relatively low difficulty of scheduling appointments and seeking guidance.

Our study underscores the significance of research experience in facilitating the research endeavors of residents during ophthalmology training. Additionally, prior research experience enriches medical education by fostering evidence generation, nurturing intellectual autonomy, and applying knowledge to scientific inquiry and clinical practice.[19,20] Our comparison between the residents with and without research experience before their training revealed notable differences in their perceived research obstacles. Residents without prior experience reported greater challenges, such as limited research knowledge, difficulties with manuscript composition, and decreased motivation for paper submission. These disparities suggest that the non-experienced group may have received inadequate training in research methodologies and manuscript writing during their medical school and internship years.

Therefore, the Medical Council of Thailand and educational authorities should promote the integration of research education within medical student and intern curricula to bolster research competencies at the undergraduate level. Additionally, facilitating research during residency training can be effectively achieved by organizing targeted educational initiatives. These may include master's degree research courses, journal clubs, research cafés, lab meetings, and manuscript writing, methodology, and biostatistics workshops.

Our findings on overall attitudes toward research revealed that ophthalmology residents in Thailand generally held slightly positive opinions. Most residents recognized the importance of conducting research for graduation and acknowledged the role of mentorship from their preceptors in facilitating the research process. The residents' recognition of the necessity for research skill

training aligns with findings in the literature.[4,6,7] Moreover, the participants acknowledged the beneficial effects of research on developing systematic thought processes, notwithstanding the challenges they encountered.

Comparisons between the two resident groups revealed differences in attitudes toward research. Residents without research experience demonstrated less enthusiasm for engaging in research, viewing it merely as a requirement for graduation. Their heavy workloads could influence this lack of interest, leading them to engage in research activities solely to fulfill academic obligations. To address this, concerted efforts are necessary by the Royal College of Ophthalmologists of Thailand and training institutions to cultivate a more positive research culture among residents. This can be achieved by emphasizing the diverse benefits of research beyond mere academic compliance.

In contrast, residents with prior research experience demonstrated a more positive and nuanced understanding of research. They expressed stronger agreement regarding the potential of research to enhance their future education and career prospects. This is consistent with the findings of Jayasundera et al.[21], which indicated that ophthalmologists in New Zealand viewed research as useful for their education, clinical practice, and career. Additionally, they valued publishing research findings in academic journals and recognized the positive impact of research on communication and interpersonal skills. These findings suggest that prior research experience fosters a deeper understanding and appreciation of the broader benefits and value of conducting research.

This study has a few limitations. A notable constraint is the participation rate of ophthalmology residents. It was approximately 50%, potentially introducing selection bias. This low rate might have been due to a lack of interest in participating, concerns about the time required to complete the questionnaire, or concerns about disclosing personal information. Additionally, the participants were recruited primarily from three major institutions, limiting the generalizability of our findings. Consequently, our data may not accurately reflect the full spectrum of obstacles and attitudes toward research prevalent across all ophthalmology residency programs in Thailand.

CONCLUSION

This investigation found that ophthalmology residents without prior research experience face more challenges than those with experience, particularly in attitudes toward research, manuscript writing, and motivation. Experienced residents generally had more favorable views and were more inclined toward research activities. We suggest that providing support and fostering a research-oriented environment might help overcome these challenges and improve attitudes toward research. Future studies will assess the effectiveness of these solutions.

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DECLARATION

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Conflicts of Interest

The authors have no conflicts of interest to declare.

Author Contributions

Conceptualization and methodology, S.S., Y.M., and P.C.; data collection, W.SA., Y.M., and S.S.; formal analysis, Y.M., W.SE.; writing—original draft, Y.M. and S.S.; writing—review and editing, P.C. and W.SE. All authors read and agreed to the published version of the manuscript.

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