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Motivations, positive experiences, and concept changes of medical students in Korea after participating in an experiential entrepreneurship course: a qualitative study

Somi Jeong[1], So Hyun Ahn[2,3,4], Hyeon Jong Yang[5], Seung Jung Kim[1,6], Yuhyeon Chu[7], Jihye Gwak[7], Naeun Im[7], Seoyeong Oh[7], Seunghyun Kim[7], Hye Soo Yun[7], Eun Hee Ha[8,9,10,11]

[1]Ewha Medical Education Center, Ewha Womans University College of Medicine , Seoul, Korea
[2]Ewha Medical Research Institute, Ewha Womans University College of Medicine, Seoul, Korea
[3]Ewha Medical Artificial Intelligence Research Institute, Ewha Womans University College of Medicine, Seoul, Korea
[4]Department of Biomedical Engineering, Ewha Womans University College of Medicine, Seoul, Korea
[5]Department of Parasitology, Ewha Womans University College of Medicine, Seoul, Korea
[6]Department of Internal Medicine, Ewha Womans University College of Medicine, Seoul, Korea
[7]Ewha Womans University College of Medicine, Seoul, Korea
[8]Department of Environmental Medicine, Ewha Womans University College of Medicine, Seoul, Korea
[9]Institute of Ewha-SCL for Environmental Health (IESEH), Ewha Womans University College of Medicine, Seoul, Korea
[10]Graduate Program in System Health Science and Engineering, Ewha Womans University College of Medicine, Seoul, Korea
[11]Department of Medical Science, Ewha Womans University College of Medicine and Ewha Medical Research Institute, Seoul, Korea

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Corresponding author
So Hyun Ahn
Ewha Medical Research Institute, Ewha Womans University College of Medicine, 25, Magokdong-ro 2-gil, Gangseo-gu, Seoul 07804, Korea
E-mail: mpsohyun@ewha.ac.kr

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Objectives: This study explored the experiences of medical students enrolled in an elective course titled "Healthcare Innovation and Women's Ventures II" at Ewha Womans University College of Medicine. The research questions were as follows: First, what motivated medical students to participate in the experiential entrepreneurship course? Second, what experiences did the students have during the course? Third, what changes did the students undergo as a result of the course?

Methods: Focus group interviews were conducted with six medical students who participated in the experiential entrepreneurship course from February 13 to 23, 2024.

Results: The analysis identified three domains, seven categories, and 17 subcategories. In terms of motivations for enrolling in the experiential entrepreneurship course, two categories were identified: "existing interest" and "new exploration." With respect to the experiences gained from the course, three categories emerged: "cognitive experiences," "emotional experiences," and "behavioral experiences." Finally, two categories were identified concerning the changes participants experienced through the course: "changes related to entrepreneurship" and "changes related to career paths."

Conclusion: Students were motivated to enroll in this course by both their existing interests and their desire to explore new areas. Following the course, they underwent cognitive, emotional, and behavioral changes. Their perceptions of entrepreneurship and career paths were significantly altered. This study is important because it explores the impact of entrepreneurship education in medical schools from the students' perspective.

Introduction

Background

In 2013, the Korean government launched the Five-Year Plan for University Entrepreneurship Education, marking it as a national project under the leadership of the Ministry of Education, the Ministry of Science, ICT and Future Planning, and the Small and Medium Business Administration. This initiative highlighted the importance of industry-academia collaboration and entrepreneurship education through the Leaders in Industry-University Cooperation project [1]. By recognizing creativity in entrepreneurship education, there is an enhancement in students' engagement with their work, which in turn positively affects their self-efficacy [2]. Programs that focus on case studies, including entrepreneurial mentoring and consulting, offer students valuable indirect entrepreneurial experiences that positively shape their entrepreneurial intentions [3,4].

Entrepreneurship education in medical schools is notably scarce, contrasting with the broader trend in general education. Entering medical school generally implies a commitment to pursuing a career as a physician, which means that medical students experience a distinct process of career exploration and transition compared to their peers in other university programs [5]. Given that the career exploration and choices of medical students profoundly affect their personal fulfillment [6], job satisfaction [7], and overall professional life [8], it is crucial to offer sufficient opportunities for such education during their medical school years. Unfortunately, research on entrepreneurship education within medical schools is virtually nonexistent.

Objectives

This study examined the experiences of students enrolled in the "Healthcare Innovation and Women's Ventures II" course, a free elective practicum offered at Ewha Womans University College of Medicine. The research questions addressed in this study are as follows: First, what motivated medical students to participate in this practice-based entrepreneurship course? Second, what positive experiences did medical students gain from the course? Third, what changes occurred in the medical students as a result of their participation in the course?

Methods

Ethics statement

The students' informed consent was obtained when conducting the survey.

Research team and reflexivity

Personal characteristics of the research team

Interviewer/facilitator: Somi Jeong.

Credentials: Ph.D.

Occupation: Special appointed professor at Ewha Medical Education Center.

Gender: Female.

Experience and training: The researcher who conducted the interviews has a Ph.D. in education and extensive experience in qualitative research, including focus group interviews (FGIs) and consensual qualitative research.

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Relationship with participants

The relationship established: The researcher conducting the interviews explained the research beforehand.

Participant knowledge of the interviewer: The researcher's affiliation, methods, and objectives of this study.

Interviewer characteristics: A homogeneous group interested in entrepreneurship education.

Study design

Theoretical framework

This study is a qualitative analysis conducted through FGIs with medical students who participated in a practice-based entrepreneurship course. Given the focus on the experiences of medical students in this course, there was a lack of prior research and established measurement tools. Therefore, the researchers decided that FGIs would be the most suitable method, as the topic centered on the students' experiences of change through their participation in the entrepreneurship course. The study is reported in accordance with the COREQ statement (https://www.equator-network.org/reporting-guidelines/coreq/).

Participant selection

Medical students enrolled in the practice-based entrepreneurship course were informed about the study to facilitate participant recruitment. Considering that the ideal participant count for an FGI ranges from 6 to 10 [9], we enrolled six fourth-year students from E-Medical School. These students had selected the practice-based entrepreneurship course as a free elective practicum and expressed willingness to participate in the study. Consequently, all students who took part in the practice-based entrepreneurship course were included in this study, totaling six participants. The characteristics of the research participants are presented in Table 1.

Setting

The entrepreneurship course at Ewha Womans University College of Medicine, introduced in 2022, includes a theoretical class titled "Healthcare Innovation and Women's Ventures I" and a hands-on practicum titled "Healthcare Innovation and Women's Ventures II." During the practicum, students visited VRAD, a medical venture company, from February 13 to 23, 2024. There, they engaged in an educational program that employed virtual reality (VR) simulations for the treatment of severe trauma patients. The students actively contributed to the development process by offering feedback and suggesting improvements to the program (Fig. 1).

Table 1. The characteristics of the research participants

Participants	Age	Decision to enroll	Previous experience with program development	Previous experience with virtual reality
Student 1	25	Independent	No	Yes
Student 2	25	Independent	No	No
Student 3	24	Recommendation by a mentor	No	No
Student 4	29	Independent	No	No
Student 5	25	Independent	No	No
Student 6	26	Recommendation by a mentor	No	No

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Fig. 1. Medical students participating in the practice-based entrepreneurship course, (A) visiting companies that develop medical content using virtual reality (VR) technology and engaging in the development process, and (B) experiencing the developed content in an actual lecture.

Data collection

To develop the research and interview questions, two researchers initially crafted a set of questions (Dataset 1) focused on the central research themes. These questions were then reviewed and approved by the other researchers involved in the study.

Prior to the interviews, students received detailed information about the study, including its objectives and methods. They consented to participate in the research and agreed to have their data recorded. The data collection interviews were held in the last week of February 2024, immediately following the conclusion of the entrepreneurship course. These interviews adhered to a structured format, utilizing a guide with open-ended questions. At the start of each interview, participants were informed about the research purpose, the expected duration, the recording of data, and the confidentiality of the interview contents. They were also made aware of their right to withdraw from the study at any time and assured of their autonomy throughout the interview process. The interviews were conducted by two researchers, Somi Jeong and So Hyun Ahn, who took notes on key points discussed. Each interview lasted about one hour. Following the interviews, the recordings were transcribed verbatim to produce the final dataset (Dataset 1).

Data analysis

The analysis was based on transcribed verbatim records and notes taken during the interviews. Initially, one researcher extracted meaningful data from these raw materials. Subsequently, two researchers, Somi Jeong and So Hyun Ahn, convened to discuss the analysis procedure and key considerations. Following this, they independently extracted secondary meaningful data. The researchers later reconvened to cross-verify the secondary data, review the categorizations, and reach a consensus. An external reviewer then examined the derived content. To ensure the validity of the analysis content and process, the research was evaluated using the method proposed by Hoyt and Bhati [10].

Results

Based on FGIs conducted to explore medical students' experiences in a practice-based entrepreneurship course, three domains, seven categories, and 17 subcategories emerged. The identified domains were motivation for participating in the course, experiences gained through participation, and changes experienced as a result of participation. Within the domain of motivation for participation, two categories emerged: "existing interest" and "new exploration." In the domain of experiences gained through participation, three categories were identified: "cognitive experiences," "emotional experiences," and "behavioral experiences." Two categories emerged in the domain of changes experienced through participation: "changes related to entrepreneurship" and "changes related to career." The details are presented in Table 2. Students' precise responses can be found in Supplement 1.

Discussion

Key results

The results yielded three domains, seven categories, and 17 subcategories. The seven emerging categories are as follows: "existing interest" and "new exploration" concerning

Table 2. Group interview results regarding participation in the hands-on entrepreneurship class

Categories	Classification 1	Classification 2
Motivation	Existing interest	To acquire knowledge
		To acquire practical information
	New exploration	To expand possibilities for various career paths
Experience	Cognitive experiences	Thinking from a consumer-centric perspective
		Learning about the effects of VR in medical education
		An understanding of the convergence of medicine and cutting-edge technology
		The need for doctors to participate in research
	Emotional experiences	"It's amazing that VR is being applied to medical education."
		"I was confused because the VR operation did not work as expected."
		"I felt regret that I was ignorant of technologies applied to the medical field."
	Behavioral experiences	Discussing better VR development with colleagues
		Seeking feedback on the experience from the user's perspective
Change experienced	Entrepreneurship	Gaining a deeper understanding of entrepreneurship
		"I want to try starting a business."
		Searching for medical venture companies
		Becoming interested in school/hospital startup support/industry-academia collaboration
	Career	Discovering the potential for various career paths
		"It served as an opportunity to think about incorporating cutting-edge medicine into medical education."

VR , virtual reality.

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motivations for participation; "cognitive experiences," "emotional experiences," and "behavioral experiences" in relation to the experiences gained; and "changes related to entrepreneurship" and "changes related to career paths" regarding the changes experienced.

Interpretation and comparison with previous studies

First, two categories emerged regarding motivation for participating in the practical entrepreneurship class: "pre-existing interest" and "new exploration." Specifically, within the "pre-existing interest" category, subcategories such as "acquiring knowledge about the entrepreneurship process" and "gaining practical information about entrepreneurship" were identified. These motivations reflect a desire to deepen one's experience in entrepreneurship, aligning with Houle's classification of educational program participation motives, which include goal-oriented and learning-oriented motives [11]. In the "new exploration" category, the subcategory "expanding the possibilities for various careers" was identified, indicating that medical students were seeking opportunities to explore diverse career paths beyond traditional clinical practice. These findings align with the objectives of general entrepreneurship education programs, which aim to enhance career exploration and development capabilities [12,13].

Second, three categories of experiences gained from participating in the practical entrepreneurship class were identified: "cognitive experience," "emotional experience," and "behavioral experience." Under "cognitive experience," subcategories including "thinking from a consumer-centric perspective," "learning about the effectiveness of VR in medical education," "understanding the integration of medicine and advanced technology," and "contemplating the necessity of doctors' participation in research" were highlighted. This finding indicates that participants developed an understanding of the role of doctors in the digital healthcare market from a managerial perspective by engaging in the actual operations of startup companies. In the "emotional experience" category, subcategories such as "amazement at the application of VR in medical education," "frustration with operating VR," and "regret over lack of knowledge about technologies used in the medical field" were noted. These results suggest that the innovations in the medical field, though closely related and previously unconsidered, made a significant emotional impact on the participants. Under "behavioral experience," subcategories like "discussing better VR development with peers" and "providing feedback from a user's perspective" were identified. These indicate that participants had opportunities to develop team-building and communication skills, which are crucial components of entrepreneurship [14,15].

Third, two categories emerged in the area of change experienced through participation in the practical entrepreneurship class: "changes related to entrepreneurship" and "changes related to career path." Within the "changes related to entrepreneurship" category, subcategories such as "deepening understanding of entrepreneurship," "increasing desire to try entrepreneurship," "investigating medical venture companies," and "gaining interest in entrepreneurship support and industry-academia collaboration by schools/hospitals" were identified. These findings suggest that entrepreneurship education encourages students to apply their knowledge, thereby enhancing their self-efficacy and motivation, which may lead to entrepreneurial intent [16]. Additionally, under the "changes related to career path" category, subcategories including "discovering the possibility of various careers beyond clinical medicine" and "considering the integration of advanced medical technologies into medical education" were identified. This indicates that students were broadening their perspectives and thought processes, moving beyond textbook knowledge to consider real-world applications of medicine.

Limitations and suggestions

A few limitations and recommendations from this study should be noted. First, the entrepreneurship class focused on a limited selection of companies. Future iterations should include a broader range of experiences, incorporating diverse contents and technologies, to improve entrepreneurship education. Second, the study was confined to fourth-year medical students. There is a need for broader educational interventions at various stages of the medical school curriculum, along with an analysis of their effectiveness. Third, unlike previous studies, the research topic here was explored through qualitative research rather than being grounded in a theoretical framework. To further understand the impact and implications of entrepreneurship classes in medical schools, additional quantitative research is necessary.

Conclusion

Medical students were drawn to this course by both their existing interests and a desire for new exploration. Following the course, students reported cognitive, emotional, and behavioral changes. Their perceptions of entrepreneurship and career paths were notably altered. This study is significant as it provides evidence of the effectiveness of entrepreneurship education in medical schools from the students' perspective. By examining students' experiences in a practical entrepreneurship class, the findings underscore the potential of such education to cultivate biomedical innovators poised to shape the future of healthcare. The next challenge lies in integrating entrepreneurship education into the medical school curriculum, which would allow medical students to further develop their entrepreneurial skills.

ORCID

Somi Jeong: https://orcid.org/0000-0002-6984-9753
So Hyun Ahn: https://orcid.org/0000-0002-0116-3325
Hyeon Jong Yang: https://orcid.org/0000-0003-3822-4002
Seung Jung Kim: https://orcid.org/0000-0003-4927-2018
Yuhyeon Chu: https://orcid.org/0009-0006-3314-503X
Jihye Gwak: https://orcid.org/0009-0004-9805-883X
Naeun Im: https://orcid.org/0009-0004-1608-5157
Seoyeong Oh: https://orcid.org/0009-0002-3833-0489
Seunghyun Kim: https://orcid.org/0009-0002-9103-3432
Hye Soo Yun: https://orcid.org/0009-0007-9619-4071
Eun Hee Ha: https://orcid.org/0000-0002-4224-3858

Authors' contributions

Project administration: Kim SJ
Conceptualization: Jeong S, Ahn SH
Methodology & data curation: Chu Y, Gwak J, Im N, Oh S, Kim S, Yun HS
Funding acquisition: Ha EH
Writing – original draft: Ahn SH
Writing – review & editing: Jeong S, Ahn SH, Yang HJ, Kim SJ, Chu Y, Gwak J, Im N, Oh S, Kim S, Yun HS, Ha EH

Conflict of interest

So Hyun Ahn has been an assistant editor of the *Ewha Medical Journal* since August 2023, and

Eun Hee Ha has been a dean of Ewha Womans University College of Medicine since August 2021. However, they were not involved in the review process. No other potential conflict of interest relevant to this review was reported.

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Data availability
Data files are available from Harvard Dataverse: https://doi.org/10.7910/DVN/Z0CQFZ

Dataset 1. Verbatim obtained from six participants

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Supplementary materials
Supplementary materials are available from: https://doi.org/10.12771/emj.2024.e40.

Supplement 1. The results of content analyses classified into three domains, seven categories, and 17 subcategories

References

1. Ahn T, Park J. The effectiveness of entrepreneurship education on college students' career paths. *J Ventur Entrep* 2018;13(2):177-192. https://doi.org/10.16972/apjbve.13.2.201804.177
2. Kim YJ, No BS. The effect of entrepreneurship education on self-leadership and entrepreneurship. *J Digit Converg* 2012;10(6):23-31. https://doi.org/10.14400/JDPM.2012.10.6.023
3. Park SH, Seol BM. A case study of entrepreneurship consulting linking graduate school of entrepreneurship and college students: entrepreneurship education and consulting program using action learning. *J Ventur Entrep* 2014;9(1):25-32. https://doi.org/10.16972/apjbve.9.1.201402.25
4. Lee SJ, Park WY, Lee BK. The influence of entrepreneurial mentoring on the entrepreneurial educational satisfaction and entrepreneurial intentions in physical education university students. *J Tourism Leisure Res* 2019;31(12):407-422. https://doi.org/10.31336/JTLR.2019.12.31.12.407
5. Cheon KH, Park E, Song YM. The effect of self-regulated learning on career adaptation among medical students. *J Vocational Educ Res* 2011;30:161-177. https://doi.org/10.37209/krabe.2011.30.4.161
6. Sud S, Wong JP, Premji L, Punnett A. Career decision making in undergraduate medical education. *Can Med Educ J* 2020;11(3):e56-e66. https://doi.org/10.36834/cmej.69220
7. Navarro A. A model for implementing medical student career development courses. *MedEdPORTAL* 2010;6:8197. https://doi.org/10.15766/mep_2374-8265.8197

8. Navarro AM, Taylor AD, Pokorny AP. Three innovative curricula for addressing medical students' career development. *Acad Med* 2011;86(1):72-76. https://doi.org/10.1097/ACM.0b013e3181ff7dfc
9. Patton MQ. Qualitative evaluation and research methods. Thousand Oaks: SAGE; 1990.
10. Hoyt WT, Bhati KS. Principles and practices: an empirical examination of qualitative research in the *Journal of Counseling Psychology*. *J Couns Psychol* 2007;54(2):201-210. https://doi.org/10.1037/0022-0167.54.2.201
11. Houle CO. Continuing learning in the professions. *J Contin Educ Health Prof* 1981;1(1):76-80. https://doi.org/10.1002/chp.4760010112
12. Kim YS, Sung CS, Park JY. A study on the effect of entrepreneurship education on career decision for college engineering students. *J Eng Educ Res* 2018;21(2):28-38. https://doi.org/10.18108/jeer.2018.21.2.28
13. Jung UJ. Analysis of the effectiveness of career exploration education linked with Bizcool Entrepreneurship Education. *J Ventur Entrep* 2014;9(3):89-95. https://doi.org/10.16972/apjbve.9.3.201406.89
14. Roure JB, Maidique MA. Linking prefunding factors and high-technology venture success: an exploratory study. *J Bus Ventur* 1986;1(3):295-306. https://doi.org/10.1016/0883-9026(86)90006-6
15. Liu L, Chung B. The influence of communication and task interdependence between the members of the startup team on the team effectiveness through the mediation of swift trust: the moderated mediation effect of team virtuality. *J Organ Personnel Manag* 2019;43(3):31-58. https://doi.org/10.36459/jom.2019.43.3.31
16. Yang J, Kim C. The effect of entrepreneurship education on entrepreneurial intention: focused on double mediation effect of entrepreneurial self-efficacy and entrepreneurial motivation. *J Korean Manag Assoc* 2020;33(3):443-461. https://doi.org/10.18032/kaaba.2020.33.3.443