Cultivating research interest among undergraduate students: Becoming a career physician-scientist

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Although the importance of scientific research is self-evident, there need to be more physician-scientists.[1] There is a concern regarding how research interest can be cultivated among undergraduate students. Ahmed et al.[2] examined the factors that hinder students from pursuing undergraduate research and the proposed solutions. The authors' latest research findings (not yet published) may enhance the generalizability of this study, considering data triangulation, with regard to increasing research-oriented physicians.

In the aforementioned research, the authors interviewed 19 first-year students studying liberal arts and basic medicine and 12 third-year students studying clinical medicine. The interviews lasted 60 minutes per participant, and the recordings were transcribed, coded, and grouped for similarity in content. The interviews focussed on factors that prevent students from pursuing a career as physician-scientists and how to address these factors. The following four factors were extracted: 1) Lack of recognition of the researcher's image due to students' inexperience; 2) Negative image of researchers (long, monotonous work, negative research results, and lack of work-life balance); 3) Intense research competition and employment instability; 4) Economic anxiety over low salaries and livelihood security. Notably, despite the different locations, methods, and persons being studied, these four factors are consistent with and explain the tree figure (main themes, along with subthemes) created by Ahmed et al.[2] The students in the authors' study also suggested countermeasures to improve these factors (See Table 1).

Research on career guidance for physician-scientists has recently increased worldwide, and programmes have been developed to support students aiming for research

Table 1: Suggested countermeasures to reduce barriers, with examples of interviewee comments.

Countermeasures	Examples of interviewees' comments
1. Career education as a researcher and active outreach activities	"Lately, I think videos of researchers doing experiments and their daily lives are becoming more and more popular on YouTube. I think that if researchers could show more information about the situations in which they are active, making students more familiar with the situation, more students would become interested."
2. Early exposure to research and interaction with senior researchers	"I think it would be good to have a programme where students can actually go to a research laboratory as early as their first or second year at university. (Omitted) Students conduct experiments together with researchers in an atmosphere where they feel like they are interacting with each other. I think providing such opportunities will increase motivation."
3. Recognizing the social importance of research and eliminating negative images	"I think there are many students who are interested in research. However, society's image of a researcher is that it's hard work, they don't get paid, and that there is no guarantee of success; so, I don't think most students think it's worth the effort. I think it would be good to change the negative image."
4. Stability of position/salary and improvement in working environment	"I've heard that you can earn more money starting a medical practice than doing research at a university. If the government provides subsidies to increase the salaries of researchers, it will increase their motivation. (Omitted) Even though their social contribution is large, their remuneration is not commensurate with their contribution. I don't think students would choose a career as a researcher when they could get paid more as a clinician."

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careers.[3] However, in many cases, these attempts do not succeed because of low motivation among students and concerns for their careers. Increasing students' motivation to conduct research at an earlier stage has attracted attention as an effective method. Future studies must confirm whether sensitizing students toward research at an early stage is effective. If we fail to nurture and retain students with research-oriented mindsets, there is a risk of "brain drain,"[4] which could have severe implications for future research productivity.

Taking cues from a previous study that attempted to quantitatively examine the intrinsic or extrinsic motivation to increase the number of physician-scientists[5], the authors attempted to qualitatively explore these factors in Japan, extending a similar study by Ahmed et al.[2] in Pakistan. Effective measures for increasing the number of physician-scientists worldwide must be reported by future studies.

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