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RESEARCH ARTICLE

Broadening The Debate Of Nurturing Medical Research Through Well-Articulated Initiatives

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ABSTRACT

Participating in medical research promotes valuable insight into teaching and learning methods and leads to generation of innovative ideas for education systems. Herein, the fruitful involvement of students as well as faculty of Medicine Program at Batterjee Medical College (Jedah, Kingdom of Saudi Arabia) is reported. Several high yielding initiatives are underway to inculcate research. They include longitudinal research block and elective block in pre-clinical years which provides basic and fundamental understanding to the students for developing a research question, define study outcomes, and identify study designs and methods. Innovative ideas in research projects have also emerged by an accelerated research program (ARP) and a FASTER (faculty and student engagement in research) initiative via mindful participation of students with the faculty members. Faculty is engaged in ongoing educational innovations and collaboration through interprofessional research activities. Other important passionate initiatives involve the research club among students as well as the faculty development research program.

INTRODUCTION

Research is a systematic investigative process that is employed to increase or revise current knowledge by discovering new facts. On the other hand, education is regarded as the aggregate of all the processes by which a person develops abilities, attitudes, and other forms of behavior of practical values that exist in society [1,2]. Research is widely regarded as providing benefits to individuals and to local, regional, national, and international communities involved in such processes. Researchers come up with innovative and creative strategies and ideas to improve the education system and its associated components and can help in taking appropriate remedial actions [3.4]. Research aids in fulfilling an institution's purpose, which is to educate and train the next generation. Student success in higher education depends on colleges and universities to give them the skills needed to prepare them for fulfilling careers. Improving research could allow for a significant uptick thereby making it one of the best college growth strategies [5,6]. Part of achieving that goal is giving students the freedom to research and learn in the best spaces possible.

Depending on the availability of infrastructure and expertise, various types of research are pursued in institutions [7-14]. However, survey-based research serves as a quick and versatile method (since the questions can be in a various format such as multiple choice, matrix, Likert scale) to transform feedback into data. The main benefit of survey research is that it provides first-hand primary data that is collected, maintained, and analyzed for fulfilling the goals. The data stays exclusive and

original thereby offering reliability, accuracy, and applicability to research goals [15-17]. Other advantages associated with survey research includes:

a. Cost: Online surveys are one of the least expensive methods of research. Even upon the addition of incentives to boost response rates, online surveys still offered more affordability than hiring research firms or agencies to do perform the survey [18,19].

b. Reach: Online surveys have tremendous reach since the feedback can be collected via email, SMS, social media, QR code, website or even in person from a kiosk. SurveyMonkey Audience can also help in gathering survey responses from respondents worldwide [20,21].

c. Flexibility: A mixed mode of research can be conducted depending upon the targeted audience [22].

METHODOLOGY

Initiatives

1. **Faculty development seminars**

   Lecture series on pertinent topics related to research development and support for Faculty Members were held once in two months, at least.

2. **Accelerated research program (ARP) and Faculty and student engagement in research (FASTER)**

   These initiatives were started where faculty was associated to the student for training purposes. The goal of these initiatives was to engage pre-clinical and clinical years Medicine students in a faculty-mentored project designed to introduce them to skills and techniques, that will be required by them to conduct independent research or creative work.

3. **Students' involvement in BMC research club**

   Research Club is a student organization that is aimed at increasing the overall student understanding and contribution to graduate research. These events include Research Club meetings and research talks from guest speakers from various Programs as well as from nearby local institution.

4. **Introduction of elective research block in 3rd year**

   The specific objectives of the course are to familiarize the students with basic research in addition to augmenting knowledge and skills for interpretation of analyses, and presentation in user friendly formats. This course addresses the foundational concepts of research design and methods; provides a more detailed exploration of designs and approaches popular with graduate students in applied disciplines, covers qualitative, quantitative, and mixed methods designs; discusses ethical considerations and quality in research; and provides guidance on writing a research proposal.

5. **Longitudinal research block in pre-clinical years (1st to 3rd year)**

   Lectures related to research are delivered to students from level 1 in every block to impart the knowledge of research methods, research process, use of research tools/techniques, writing and presentation skills to the medical students. This course is intended to provide the students with a broad overview of methods and concepts of both quantitative and qualitative research as well as the basic biostatistics used in the research.

6. **Participation in national and international conferences**

   Students are motivated to participate in academic events (conferences, symposia, competitions, and professional meetings) to:

a. Draw the passion of research and enhance their research skills
b. Involve themselves in academic research
c. Intricate and exchange ideas on a global platform with internationally well-known scholars and people from industry and academia

7. Publication and awards

Publishing research in open access journals of national and international repute through institutional help.

RESULTS AND DISCUSSION

1. Faculty development seminars

Involvement in research by the health professions today requires the acquisition of knowledge and competencies that go beyond disciplinary expertise. Whereas it was once assumed that expertise in one's field was sufficient to conduct research, it is now generally accepted that different expertise brings fruitful research products. For faculty members to be effective as educators, beyond their disciplinary expertise, direct enhancement of educational skills is indispensable. Faculty development activities, which have been designed to address this need and improve their effectiveness have been offered in several health professions [23-26]. Table 1 depicts the series of lectures that represent the initial phase of promoting research.

Table 1: Research lectures by BMC Medicine Program faculty

S. no.	**2022-2023**
	Title
1	Types of research
2	How to construct research proposal for beginners
3	Questionnaire designing
4	SPSS - statistical tool
5	Ethical issues throughout the research journey
6	How to write a review article
7	Evidence-Based Medicine and assessing scientific articles
8	How to determine fake journals
	2023-2024
1	Research proposal for beginners
2	Efficacy & Effectiveness from a Research Perspective

3	Types of review article
4	Introduction to Gene Bank
5	HIV-an outbreak investigation
6	Qualitative Research

2. Accelerated research program (ARP) and faculty and student engagement in research (FASTER) initiatives

Several research proposals (unbudgeted and budgeted) are currently underway because of these initiatives [Fig 1]. It involves faculty as well as students in broader area of research including artificial intelligence, bioinformatics, pathology, neurobiology, geriatrics, biochemistry, anatomy, epidemiology, obstetrics and gynecology, pediatrics, surgery, microbiology, internal medicine, pharmacology, immunology and medical education, which aimed to explore career paths and nurturing creativity among students. Few examples of some excellent findings that have been published in journals of national and international repute through these research proposals as well as through national/international collaborations among various faculty members are mentioned here [27-32].

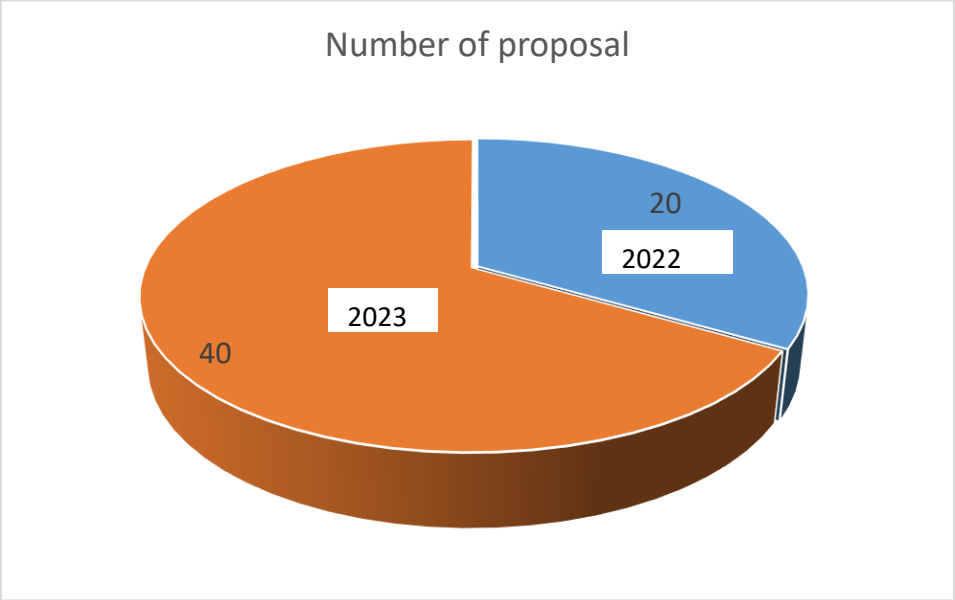

Fig 1: Number of research proposals accepted by institutional research Unit

3. Students' involvement in BMC research club

The importance of Academic Research Club (ARC) is widely known. It incorporates a passionate and dedicated group of students committed to fostering a global community of researchers and enthusiasts [33]. Similarly, a research club is led by a team of motivated individuals (under the aegis of institutional research unit) who believe that every student has the potential to make a significant impact in the academic world.

4. Introduction of elective research block in 3rd year

Elective courses are offered to students as a fundamental option to allow them to have diversified and specific learning experiences in interest, beyond fixed curricular boundaries. Although elective courses are gaining importance in health professions training, their full potential is still untapped [34]. Keeping in view of the gap, a research elective block was incorporated in the Medicine curricula, which provides an extra option to the students to enhance a particular research interest, pursue an academic pathway, or investigate a subspecialty interest more deeply [Table 2].

Table 2: Research elective block in level 3 of Medicine program

Topics covered in Elective research block
Introduction to research
Research assumptions and Research hypothesis
Sampling methods
Critical Thinking
Proposal writing & Manuscript Writing
Quantitative and Qualitative Research
Literature review
Formulating research question
Clinical epidemiology
Disease measures in epidemiology
Study design in clinical research (observational study 1)
Study design in clinical research observational study 2)
Study design in clinical research (basic of clinical trial)
Normal Distribution, Variables & Graphical Presentation of Data

5. Longitudinal research block in pre-clinical years (1st to 3rd year)

Table 3 showed various research-based lectures that were covered in various blocks to give the students basic idea of research, and to encourage them for research.

Table 3: Research lectures incorporated in various pre-clinical years blocks of Medicine program

Level	Block	Lecture title
M1	Cognition & Action	Introduction to Research Qualitative and qualitative research
	Digestion & Defense	Sampling in Research Research assumptions and research hypothesis
	Growth & Development	Critical thinking and Formulating research questions
	Respiration & Circulation	Literature review
	Regulation & Integration	Types of research
M2	Respiration & Circulation	Introduction to biostatistics, Variables & graphical presentation of data
	Digestion & Defense	Measurement of central tendency and dispersion
	Cognition & Action	Case Reports and case series
	Growth & Development	Priority criteria for selecting a research topic
	Regulation & Integration	Survey based research
	Respiration & Circulation	Clinical epidemiology Disease measures in epidemiology
	Growth & Development	Study design Calculation of Relative Risk and Odds Ratio Research ethics

M3	Primary Health Care	Normal distribution curve
	Cognition & Action	Clinical trials
	Digestion & Defense	Proposal and Manuscript writing

6. Participation in national and international conferences

Conferences are a traditional indicator of activity within a field and of the commitment of individuals to their own practice and the sphere in which they operate. They offer opportunities for learning including evidence-based practice and current awareness, gaining new knowledge and objectivity, and networking and other unexpected benefits of conferences [35]. The above-mentioned initiatives that are underway were able to create motivation among the staff as well as students to participate in national as well as international conferences. Fig 2 indicated that 16 faculty and 84 students participated in such conferences in 2023. However, these numbers increase to 47 and 155, respectively, in the current year.

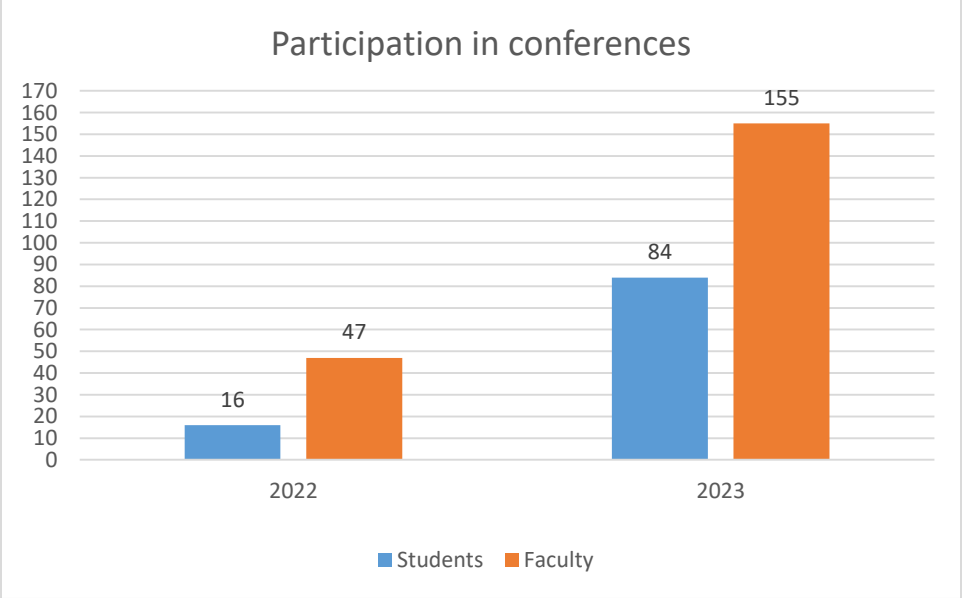

Fig 2: Faculty and student participation in conferences

7. Publication and awards

The scholarly publications become accessible and reusable online without financial, technical, and legal barriers because of open access availability of articles [36,37]. Along with these available options, publication reimbursement from BMC research unit serves as an excellent motivating factor to keep the initiatives on track. It was observed that the number of publications were 25 and 58 in 2022 and 2023, respectively by the Medicine faculty and students [Fig 3]. Moreover, a significant increase in citation was noticed from 41 in 2022 to 100 in 2023 for these publications [Fig 4].

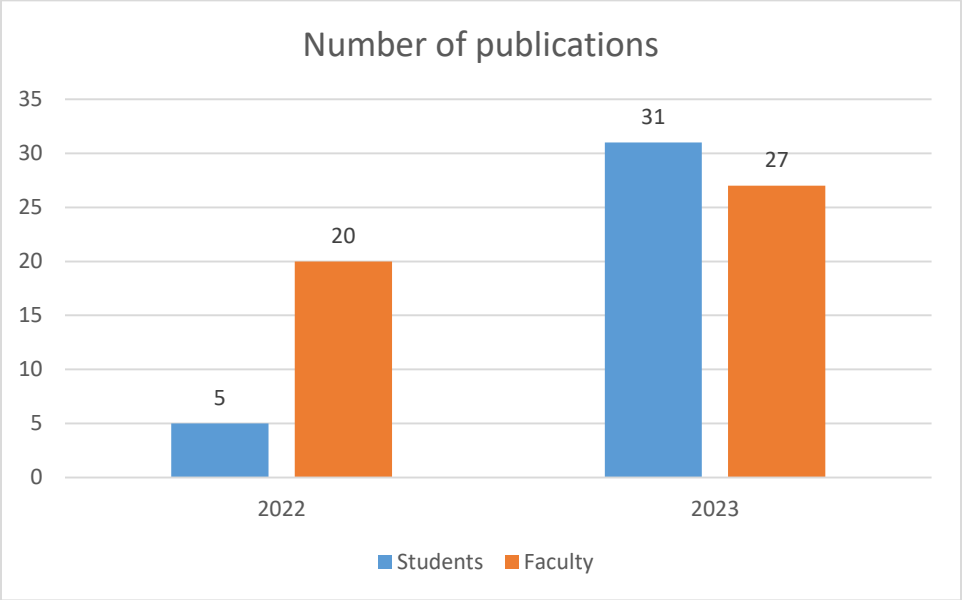

Fig 3: Publications by Medicine faculty and student

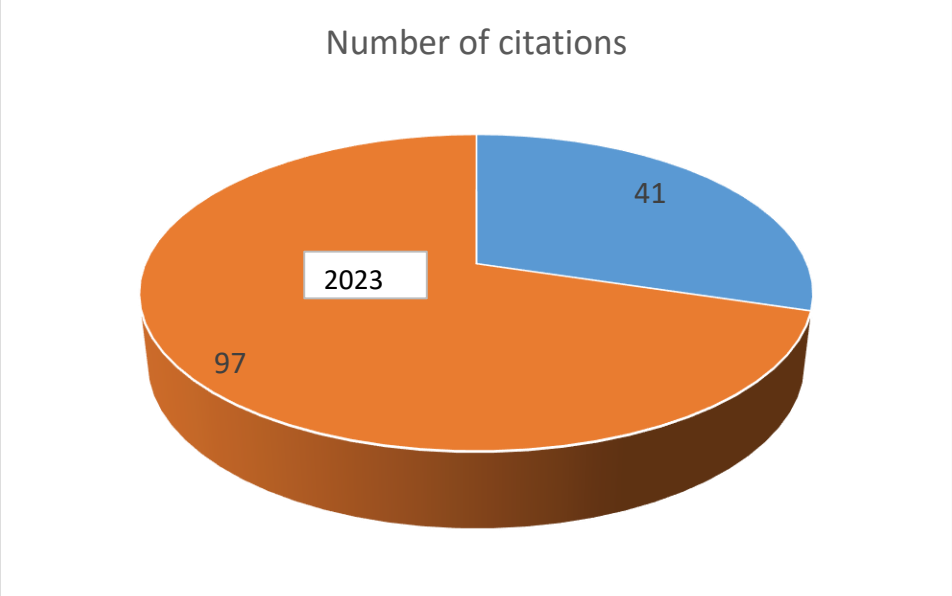

Fig 4: Number of citations for the published study

CONCLUSION AND FUTURE DIRECTION

Improving research in any institution is a multi-faceted and complicated undertaking. There are many ways to go about improving research initiatives, but to sum it all up, being inclusive of various academic disciplines is a strong way to diversify the content. Having versatile specialized staff in well-

developed departments and programs serves as an excellent way to start improving the research output in an institution.

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Competing interests

The authors declare no competing interests.

REFERENCES

1. Nelson. J., Campbell, C (2017). Evidence-informed practice in education: meanings and applications, *Edu. Res.* 59, 127-135.
2. Newman. M., Gough, D (2019). Systematic reviews in educational research: Methodology, perspectives, and application. *Sys. Rev. Ed. Res.* 15, 3-22.
3. Snyder. H (2019). Literature review as a research methodology: An overview and guidelines. *J. Bus. Res.* 104, 333-339.
4. Cleland. JA (2017). The qualitative orientation in medical education research. *Kor. J. Med. Edu.* 29, 61-71.
5. Rohrig. B., du Prel. JB, Wachtlin. D, Blettner. M (2009). Types of study in medical research: part 3 of a series on evaluation of scientific publications. *Dtsc. Arz. Int.* 106, 262-268.
6. Pillai. RK, Mehendale. S, Awasthi. S, Varman. R (2015). The significance of research in post-graduate education and ways to facilitate. *Clin. Epid. Glob. Heal.* 3, 58-62.
7. Rasmussen. KE, Kemshaw. MR, Zornes. DA (2016). Defining and assessing research quality in a transdisciplinary context. *Res. Eval.* 25, 1-17.
8. Burns. PB, Rohrich. RJ, Chung. KC (2011). The levels of evidence and their role in evidence-based medicine. *Plast. Recon. Surg.* 128, 305-310.
9. Spieth. PM, Kubasch. AS, Penzlin. AI, Illigens. BM, Barlinn. K, Siepmann. T (2016). Randomized controlled trials - a matter of design. *Neuro. Dis. Treat.* 12,1341-1349.
10. McLeroy. KR, Norton. BL, Kegler. MC, Burdine. JN, Sumaya. CV (2003). Community-based interventions. *Am. J. Pub. Health.* 93, 529-533.
11. Budgell. B (2008). Guidelines to the writing of case studies. *J. Can. Chiro. Assoc.* 52, 199-204.
12. Haidich AB. Meta-analysis in medical research. Hippokratia 2010; 14(7): 29-37.
13. Charrois, TL (2015). Systematic reviews: what do you need to know to get started? *Can. J. Hosp. Pharm.* 68, 144-148.
14. Hansen. M, O'Brien. K, Meckler. G, Chang. AM, Guise. JM (2016). Understanding the value of mixed methods research: the Children's safety initiative-emergency medical services. *Emerg. Med. J.* 33, 489-494.
15. Nisar. S, Alshanberi. AM, Mousa. AH, El Said. M, Hassan. F, Rehman. A, Ansari. SA (2022). Trend of social media use by undergraduate medical students; a comparison between medical students and educators. *Ann. Med. Surg.* 28, 104420.
16. Souza. AD, Vaswani. V (2020). Diversity in approach to teaching and assessing ethics education for medical undergraduates: A scoping review. *Ann. Med. Surg.* 27, 178-185.
17. Ikram. N, Mousa. AH, Alshanberi. AM, Mohammad. SA, Radwan. H, Awais. M, Majeed. M (2022). Choice of medicine program: A single-institution study. *Ann. Med. Surg.* 81, 104410.
18. Tsolakidis. D, Kakatsaki. D, Glotsos. D (2023). Statistical analysis of a questionnaire-based survey for assessing the impact of Tai Ji on the World Health Organization definitions regarding Quality of Life (QoL). *Eng. Proc.* 50, 14-21.

19. Villegas. CW, Criollo. CS, Gaibor. NW, Palacios. PX (2022). Analysis of data from surveys for the identification of the factors that influence the migration of small companies to ecommerce. *Fut. Int.* 14, 303-310.
20. Kennedy. EB, Jensen. EA, Jensen. AM (2022). Methodological considerations for survey-based research during emergencies and public health crises: Improving the quality of evidence and communication. *Front. Comm.* 6, 736195.
21. Jamieson. KH, Lupia. A, Amaya. A, Brady. HE, Bautista. R, Clinton. JD, Dever. JA, Dutwin. D, Goroff. DL, Hillygus. DS, Kennedy. C, Langer. G, Lapinski. JS, Link. M, Philpot. T, Prewitt. K, Rivers. D, Vavreck. L, Wilson. DC, McNutt. MK (2023). Protecting the integrity of survey research. *PNAS Nexus* 2, 49-57.
22. Aggarwal. N (2013). Faculty development in a flexible learning context. *Proc. Soc. Beh. Sci.* 93, 1329-1332.
23. van Diggele. C, Roberts. C, Burgess. A (2020). Interprofessional education: tips for design and implementation. *BMC Med. Educ.* 20, 455-461.
24. Turan. Z, Kucuk. S, Cilligol. KS (2022). The university students' self-regulated effort, flexibility and satisfaction in distance education. *Int. J. Educ. Technol. High Educ.* 19, 35-42.
25. Ramirez-Montoya. MS, Ceballos. HG, Martinez-Perez. S, Romero-Rodriguez. LM (2023). Impact of teaching workload on scientific productivity: multidimensional analysis in the complexity of a Mexican private university. *Publications* 11, 27-35.
26. Troncoso. E, Lopez. DA, Ruby-Figueroa. R, Koch. D, Reich. R (2024). Does quality matter? Quality assurance in research for the Chilean higher education system. *Publications* 12, 4-12.
27. Alshanberi. AM, Mousa. AH, Hashim. SA, Almutairi. RS, Alrehali. S, Hamisu. AM, Shaikhomer. M, Ansari. SA (2024). Knowledge and perception of AI among faculty members and medical students in Batterjee Medical College: a cross-sectional study. *J. Pharm. Bioall. Sci.* 16, 829-838.
28. Alnabulsi. M, Imam. AA, Alawlaqi. AA, Alhawaj. FH, Jamjoom. GF, Alsaeidi. LD, Hassan. FES, Ansari. SA (2024). Adherence to the Mediterranean diet in Saudi Arabia and its association with socioeconomic status and depression. *Medicina* 60, 642-650.
29. Alshanberi. AM (2023). Frailty in Kingdom of Saudi Arabia—Prevalence and management, where are we? *Healthcare* 11, 1715-1721.
30. Nisar. S, Alshanberi. AM, Mousa. AH, El Said. M, Hassan. F, Rehman. A, Ansari. SA (2023). Trend of social media use by undergraduate medical students; a comparison between medical students and educators. *Ann. Med. Surg.* 81, 561-567.
31. Abo-Ali, EA, Mousa, A, Hussien, R, Mousa, S, Al-Rubaki, S, Omar, M, Al-Haffashi, B, Almilaibary, A (2022). Voluntary testing for COVID-19: perceptions and utilization among the inhabitants of Saudi Arabia. *Oson. Pub. Health Res. Perspect.* 13, 212-220.
32. Ikram. N, Mousa. AH, Alshanberi. AM, Mohammad. SA, Radwan. H, Awais. M, Majeed. M (2022). Choice of medicine program: A single-institution study. *Ann. Med. Surg.* 81, 104410.
33. Guizzardi. S, Colangelo. MT, Mirandola. P, Galli. C (2023). The evolution of narrativity in abstracts of biomedical literature between 1989 and 2022. *Publications* 11, 26-32.
34. Mahajan. R, Singh. T (2021). Electives in undergraduate health professions training: Opportunities and utility. *Med. J. Arm. Forc. India* 77, S12-S15.
35. Hodgez. DZ (2020). Attend conferences for professional and personal development. *Dean and Provost* 21, 1-3.
36. Saravudecha. C, Na. TD, Phasom. C, Gunta. S, Metha. A, Punyaphet. P, Sookruay. T, Sakuludomkan. W, Koonrungsesomboon. N (2023). Hybrid gold open access citation advantage in clinical medicine: Analysis of hybrid journals in the web of science. *Publications* 11, 21-30.
37. Pampel. H (2023). Promoting open access in research-performing organizations: Spheres of activity, challenges, and future action areas. *Publications* 11, 44-50.