Research Article

Developing a Community of Practice through Social Media to Facilitate Continuing Education of Medical Practitioners in Medical Research

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Abstract

The emergence of COVID-19 has highlighted the significance of research in medical practice, particularly in low- and middle-income countries (LMICs) like Indonesia, where healthcare challenges are prominent. Therefore, this study introduces Arcandcoresearch, a non-institutional-based virtual Community of Practice (vCoP), aiming to address the research capacity gaps among medical practitioners. This study aimed to understand the possibility of using several social media platforms (Instagram, YouTube, and WhatsApp) in the vCoP for continuing medical education of general practitioners regarding medical research. Through Instagram, the project has gained substantial follower growth (1003 followers within 19 months); most were 25-34 years old (69%). Within six months, 124 medical practitioners participated in five sharing sessions via Zoom meetings. All participants who completed the feedback form were satisfied with the content delivery of the sessions. The recorded sharing sessions were then uploaded to the YouTube channel. It already had 150 subscribers until September 2023, with 397 viewers for the videos uploaded in 2022. We facilitated participants to discuss any concerns related to medical research in the WhatsApp group, which already had 24 participants. These preliminary results highlight the potential of Arcandcoresearch to impact medical research culture positively in LMICs. The next steps should be conducting thorough program evaluations and developing strategies for sustaining virtual engagement.

Keywords: social media, community of practice, continuing medical education, medical research.

Pengembangan *Community of Practice* melalui Media Sosial untuk Memfasilitasi Pendidikan Kedokteran Berkelanjutan mengenai Penelitian Medis

Abstrak

Kemunculan COVID-19 menunjukkan pentingnya penelitian dalam praktik medis, terutama di negara berkembang seperti Indonesia yang memiliki tantangan kesehatan sangat nyata. Oleh karena itu, studi ini memperkenalkan Arcandcoresearch, sebuah virtual community of practice (vCoP) non-institusional, yang bertujuan untuk mengatasi kesenjangan kapasitas penelitian di kalangan praktisi medis. Penelitian ini bertujuan untuk mengeksplorasi kemungkinan penggunaan beberapa platform media sosial (Instagram, YouTube, dan WhatsApp) dalam vCoP untuk pendidikan berkelanjutan terkait penelitian medis. Melalui Instagram, proyek ini berhasil mendapatkan pengikut sebanyak 1003 akun dalam 19 bulan, yang sebagian besar berusia 25-34 tahun (69%). Sebanyak 124 praktisi medis berpartisipasi dalam lima sesi webinar melalui Zoom meeting selama enam bulan. Semua peserta yang mengisi formulir umpan balik merasa puas dengan sesi webinar tersebut. Rekaman webinar kemudian diunggah ke YouTube. Hingga September 2023, Kanal YouTube channel Arcandcoresearch telah memiliki 150 pelanggan, dengan 397 orang telah menonton video yang diunggah sejak tahun 2022. Kami memfasilitasi peserta untuk mendiskusikan segala kekhawatiran terkait penelitian medis dalam grup WhatsApp, yang sudah memiliki 24 anggota. Hasil awal ini menunjukkan potensi Arcandcoresearch untuk memberikan dampak positif pada penelitian medis di negara berkembang. Langkah selanjutnya adalah melakukan evaluasi menyeluruh pada program dan mengembangkan strategi untuk mempertahankan keterlibatan virtual.

Kata kunci: media sosial, community of practice, pendidikan kedokteran berkelanjutan, penelitian kedokteran.

Introduction

The emergence of COVID-19 has highlighted the significance of research in clinical practice to manage this novel virus.[1] In the pandemic era, every innovation regarding COVID-19 needs in be reported.[1] It demonstrated the necessity for good research skills among medical practitioners, especially in low- and middle-income countries (LMICs), including Indonesia, where health burdens are greater than in higher-income countries. In contrast, research capacity is lower than in higher-income countries.[1,2] Additionally, medical practitioners face difficulties conducting medical research due to time constraints, lack of support and mentorship, and funding inequality.[2] Therefore, developing medical practitioners as researchers in LMICs requires well-trained individuals with dedicated time to conduct research and also have strong mentorship and networking with international and local researchers.[1]

One enabling factor for medical practitioners to conduct research is having a mentor or supporter to assist them in generating research ideas, executing the research, and analyzing data for manuscript writing.[2] These mentors may be available at the institutions but are not always in the clinical practice, requiring medical practitioners to find their own supporters.

A community of practice (CoP) is a group of people with common purposes or interests who learn and improve their skills and knowledge through regular interaction.[3] This can also support research. The interaction of these people, particularly medical practitioners and other healthcare professionals sharing the same interests, can initiate a community to learn and discuss medical research together.[3] The CoP that utilizes web-based technology to facilitate engagement and communication is called virtual CoP (vCoP).

Social media can be a platform to build a community of practice.[4] It plays an important role in CoP as a communication medium despite physical boundaries and is accessible in resource-poor settings.[4] Moreover, social distancing due to the pandemic has accelerated the utilization of social media for personal use, to deliver educational content, and to serve as a medium for continuing medical education (CME).[5–7] Therefore, it benefits medical practitioners' professional development.[8]

Despite the interest in using social media for medical education, most medical practitioners currently do not have access to a community of practice using social media to learn how to conduct medical research. This hinders them from starting research or writing a high-quality article. Between 2008 and 2010, only 21% of publications in Indonesian medical journals had high-quality reporting, and 15% had high-quality methodology.[9] In addition, many reported vCoPs are institutional-based,[10–12] which people outside the institution can hardly access. Therefore, this article described a non-institutional-based CoP for medical practitioners using social media: Arcandcoresearch to facilitate continuing education in medical research.

This study aimed to understand the possibility of using several social media platform in the virtual community of practice to continue medical education for general practitioners regarding medical research.

Methods

Study Context

Arcandcoresearch is a virtual CoP utilizing social media and was initiated by six postgraduate students. During the study, five of these students are pursuing master's degrees in various medical majors around the world, while one student is an ophthalmology resident. The objectives of this project are to (1) raise awareness among medical practitioners regarding health literacy, (2) establish a support group accessible to anyone in need of assistance with medical research, and finally, (3) encourage the development of a research culture, particularly in Indonesia. We leverage social media to expand
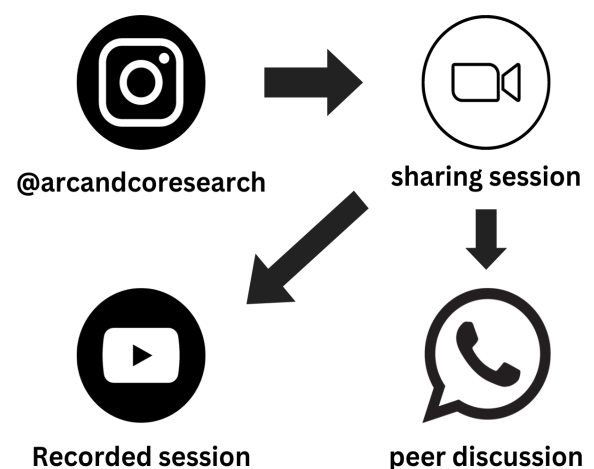

@arcandcoresearch **sharing session**

Recorded session **peer discussion**

Figure 1. Flowchart of Social Media Utility

exposure and share research knowledge (Figure 1).

The Instagram account (@arcandcoresearch) was created to disseminate educational content related to medical research, aiming to reach a broader audience, particularly medical practitioners. Additionally, we conduct monthly sharing sessions via Zoom, covering various topics such as master's in medicine, medical data literacy, critical appraisal, sample size determination, and scientific article writing. We extend invitations to speakers from Indonesia and other countries, including the United States. Recordings of these sessions are uploaded to our YouTube channel for broader accessibility. Following the sessions, participants are invited to join a WhatsApp group, providing a platform for discussing anything related to medical research. Members are encouraged to ask questions and provide appropriate responses freely.

Data Collection

This descriptive study utilized the @arcandcoresearch Instagram insight and Google form as the data source. From February 2022 to September 2023, Instagram Insight Analytics was explored to describe the demographic characteristics of the followers, such as country, city location, gender, and age ranges.

From April to October 2022, we had five online sharing sessions on threats to validity, public health and health policy study, critical appraisal, sample size, and scientific writing. The total number of participants from those sessions was calculated based on the number of participants in Zoom meetings, excluding the Arcandco team. To gain feedback on our sharing sessions, we handed out a questionnaire via Google Forms to the participants in each session. The questionnaire consisted of close-ended questions with a Likert scale (1-5) and open-ended questions to determine the participant's satisfaction with the content delivery, the lesson learned they obtained, and their suggestions to improve it.

The recorded sharing sessions were then uploaded to YouTube. The number of subscribers and total viewers from the first four videos uploaded were retrieved from the Arcandcoresearch YouTube channel. The four first videos were sessions held from July to October 2022. After the sharing session, we invited participants to join the Whatsapp group Arc&Co Peer Discussion. The total number of participants discussed in the WhatsApp messenger was calculated based on the number of members in the group, excluding ArcandCo founders.

Ethical approval was not required for a project evaluation based on information freely available in the public domain (Instagram) and using a non-sensitive, utterly anonymous survey (Google Forms). This study was descriptive; thus, the information was presented as numerical data or percentages. The responses provided by participants in the open-ended questions and discussion forum were analyzed to identify emerging themes.

Results

Between February 2022 and September 2023, our Instagram account gained 1003 new followers. The majority of our Instagram followers were from Indonesia (91.6%), while others were from various foreign countries, such as the United States, Australia, the United Kingdom, and Japan (Table 1). Most of those who live in Indonesia, were from Jakarta (27.3%), Semarang (10.9%), and Surabaya (2.5%) which were the top 3 cities. Based on the age ranges provided by Instagram Insight Analytics (Figure 2), most followers were between age 25 and 34 (69%), followed by age 18 and 24 (20.2%).

Table 1. The Demographic of Instagram Followers between February 2022 to September 2023

Instagram Followers (n=1003)	n	%
Country		
Indonesia	919	91.6
United States	24	2.4
Australia	16	1.6
United Kingdom	12	1.2
Japan	9	0.9
City		
Jakarta	274	27.3
Semarang	103	10.3
Surabaya	25	2.5
Bandung	19	1.9
Yogyakarta	14	1.4
Gender		
Female	720	71.8
Male	282	28.1

Five sharing sessions with 124 participants were conducted from April to October 2022. After each session, we distributed feedback forms, and 21 (17%) participants completed them. All 21 participants (100%) expressed satisfaction with the knowledge and content delivery of the sessions. However, they suggested incorporating more interactive elements, such as workshops that allow an extended discussion time or focus

on a specific topic in each session. Additionally, they requested diverse topics like systematic review, qualitative research, and referencing.

As of September 2023, 150 accounts have subscribed to the Arcandcoresearch YouTube channel. The video on public health and health policy studies, critical appraisal, sample size, and scientific writing has generated attention, with 397 accounts
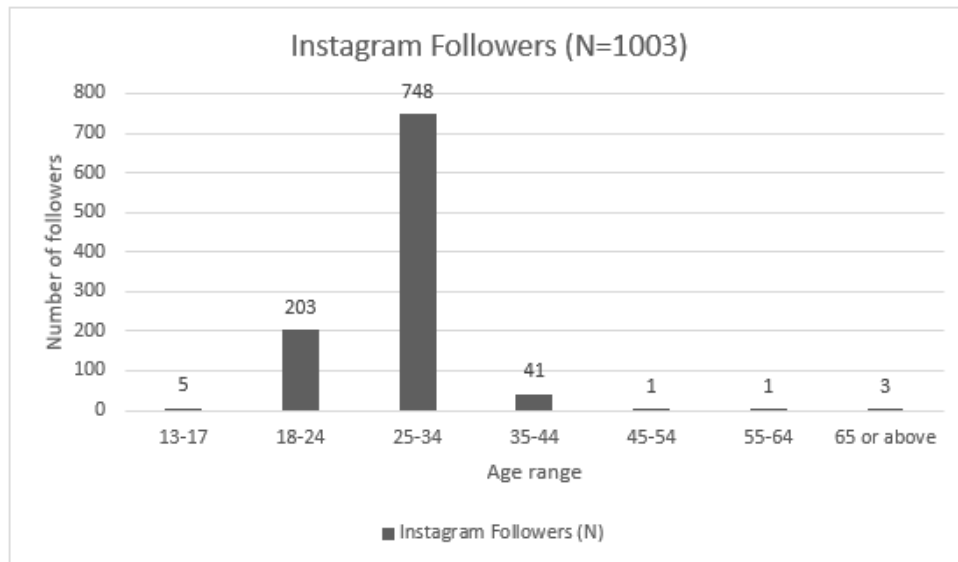

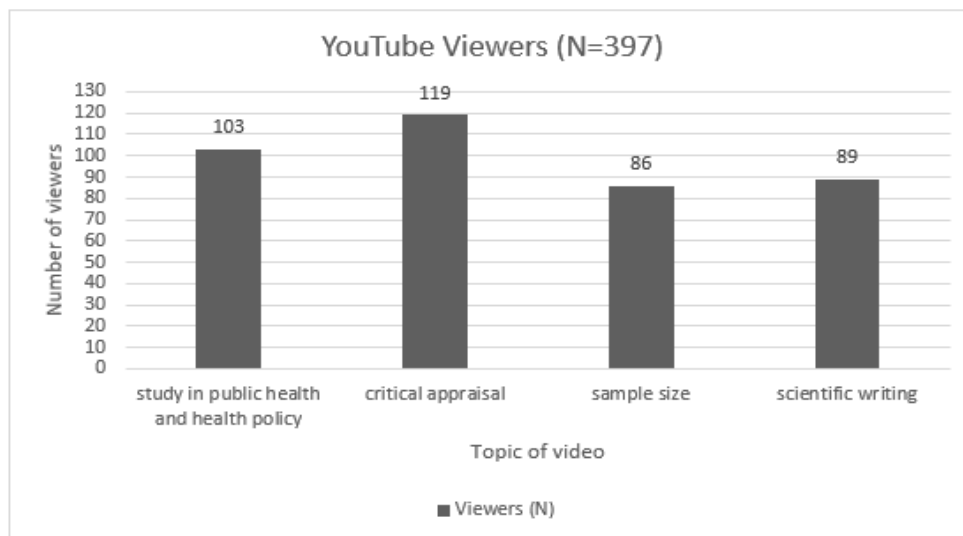**Figure 2. The Age Ranges of Instagram Followers**

Figure 3. The Number of Viewers for Each Video of a Sharing Session Uploaded on Youtube

viewing it (Figure 3).

24 participants engaged in group discussion via WhatsApp in the Arc&Co Peer Discussion. This diverse group included undergraduate and postgraduate medical students and medical doctors. The platform serves as a space where members can seek assistance related to their ongoing research. Some members inquired about topics such as meta-analysis, systematic

review, and randomized controlled trials. Since no designated expert was available on this platform, we consistently encouraged them to refer to recommended sources and cross-check information with experts or their supervisors.

Discussion

This article represents the first report on the utilization of several social media platforms within

a virtual community of practice (vCoP) aimed at enhancing the continuing medical education of medical doctors and fostering the development of research skills. The structure of this vCoP was crafted based on three key characteristics defined by Wenger et al[13]: a mutual agreement among founders to build relationships, the determination of a specific focus or domain, and the sharing of resources with others. Arcandcoresearch was developed around a common interest in medical research, bringing together medical students, doctors, and postgraduate students with similar interests in medical research. Members exchanged information through various social media channels and provided mutual support in their research endeavours.

The development of this vCoP followed a literature-based recommendations stepwise approach.[10] Naturally, it was designed around our common interest in medical research as the initiators. We incorporated both public (Instagram) and private (WhatsApp) spaces to facilitate member interaction. Regular learning opportunities, such as sharing sessions, were organized to encourage collaborative learning and to welcome new members from diverse backgrounds. A discussion group was also established to enable members to learn from each other. By leveraging various platforms, this vCoP aims to assist members in overcoming barriers to conducting medical research and fostering a successful generation of scholars.[10]

This vCoP also adopts an apprenticeship model akin to the Academic Life in Emergency Medicine (ALiEM) faculty incubator.[14] Meanwhile, the ALiEM faculty incubator concentrates on early- and mid-career clinician educators for developing scholarly activity using an online, closed social media platform (Slack).[14] Arcandcoresearch aims to support the early career medical doctor, although membership is not restricted to this group. Furthermore, we leverage multiple social media platforms based on the findings of a meta-analysis by Cheston et al[15], indicating that social media enhances engagement and satisfaction levels compared to traditional methods of delivering medical education.[15]

Applying the concept of situated learning,[16] the initiators of Arcandcoresearch served as the core members, managing knowledge sharing and organizing social media activities. Peripherally legitimate members, including content creators and discussion moderators, assist in running events. New members join sharing sessions and participate in group discussions. People outside the CoP may also benefit from Arcandcoresearch, such as content readers produced on Instagram.

Arcandcoresearch utilizes both open and closed networks on various social media platforms. Initially, we created an open Instagram account, posting content related to upcoming sharing sessions. For instance, ahead of a session on critical appraisal, we uploaded steps for conducting critical appraisal on the Instagram feed, aiming to pique followers' curiosity about the topic and encourage participation in the sharing session. This strategy significantly increased our exposure, attracting 1003 followers within 19 months of operation. Additionally, we chose Instagram for its provision of easily accessible educational content, which is particularly beneficial for audiences with limited access to teaching opportunities.[17]

The various distributions of followers' locations highlighted the platform's ability to reach a global audience. The majority of followers were located in Indonesia, especially in the five major cities on Java island: Jakarta, Semarang, Bandung, Yogyakarta, and Surabaya. In low- and middle-income countries (LMICs) like Indonesia, internet access is not uniformly distributed. Urban areas are more likely to have reliable internet access compared to rural areas.[18] As a result, followers from urban areas may possess better digital literacy and more opportunities than general practitioners residing in rural settings.[19]

In 2018, Instagram boasted one billion active users, primarily young adults and adolescents,[20] which explains the age range of our followers, predominantly between 25-34 years old. Instagram's widespread usage among this demographic makes it an effective and accessible tool for sharing information about medical research.[21]

To enhance our knowledge of medical research, we conducted five sharing sessions from April to October 2022. Despite a low response rate (17%), participants expressed satisfaction with the knowledge and content delivery. This rate might have been higher if, as in other webinars, questionnaire completion was mandatory for obtaining a certificate. Conducting sharing sessions through Zoom meetings proved cost-effective, eliminating travel and time expenses for speakers and participants,[22] allowing us to invite speakers from abroad.

YouTube serves as an educational resource for medical students and practitioners, benefiting those outside the vCoP.[23] Some use it to watch medical procedures, while others use it as a medical

information source.[24] YouTube in vCoP is beneficial for individuals outside the membership.[10] They can watch the videos without having to be members of vCoP. It also benefits members who want to delve deeper into a topic or cannot attend the sharing session directly. Although the Arcandcoresearch YouTube channel has fewer subscribers and viewers compared to other popular channels, it still demonstrates that people need the video to be uploaded to YouTube to watch it repeatedly.

Questions asked by the members in the WhatsApp group demonstrate that they have conducted research and need someone to respond to their concerns. As a closed network, the WhatsApp group creates a safe space for members, especially junior or introverted individuals, to share their concerns or ask for feedback.[10] The WhatsApp discussion group includes physicians from different career levels and healthcare students from various backgrounds. Therefore, it also facilitates networking and peer mentoring for members,[10] especially novice researchers with no mentor. They feel supported in conducting research and become more confident.

This study has some limitations. Instagram Insight only provides data for the last 90 days. The number of followers and their characteristics only represent the condition of the previous 90 days. However, the total followers' confirmation does not fluctuate as much as account reach and engagement. Therefore, account reach and engagement were not considered for further analysis, as they could fluctuate monthly.

The response rate to the feedback form was low. It is possible that only motivated participants agreed to fill out the form. Thus, the participant motivation needs to be increased with some reward, such as a certificate of participation.

This infant project is still ongoing, and we will always try to improve based on feedback given by the participants. More thorough evaluation is necessary to discover the development of the participant's knowledge and skills regarding medical research. A pre-and post-quiz should be provided to find the difference in participants' knowledge before and after the webinar. Maintaining participant engagement in the virtual environment is another challenge that must be considered for future events.

Conclusion

Arcandcoresearch represents an innovative non-institutional-based virtual Community of Practice (vCoP) utilizing diverse social media platforms to address the challenges medical practitioners face in low- and middle-income countries, particularly Indonesia, for conducting research. Through Instagram, Zoom, YouTube, and WhatsApp, the project has successfully engaged a global audience, sharing knowledge through Zoom sessions, providing valuable resources and creating a secure space for networking. The project's preliminary success, as evidenced by the follower's growth, positive feedback, and widespread engagement, demonstrated its potential impact on developing research culture in Indonesia. The next steps involve conducting thorough evaluations and finding effective methods for sustaining virtual engagement.

Acknowledgment

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