Using Instagram to Enhance the Hematology and Oncology Curriculum During the COVID-19 Pandemic: A Cross-Sectional-Study

Julia Felicitas Leni Koenig, Judith Buentzel, Wolfram Jung, Lorenz Truemper, Rebecca Isabel Wurm-Kuczera

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Abstract

Background: During the COVID-19 pandemic in person medical education at the University Medical Center Göttingen was restricted, making a rapid expansion of novel tools for digital education necessary. For the first time at our university medical center an Instagram account was developed as a tool for medical education and used as a supplementation for the Hematology and Medical Oncology teaching module of 2020/21.

Objective: We aimed to evaluate the acceptance and role of Instagram as a novel teaching format in the education of medical students in hematology and medical oncology in the German medical curriculum.

Methods: To investigate the role of Instagram in student education of hematology and medical oncology, an Instagram account was developed as a tie-in for the teaching module of 2020/21. The account was launched with the beginning of the teaching module and 43 posts were added over the 47 days of the teaching module (at least one post a day). Five categories for content were established: 1) engagement, 2) self-awareness, 3) everyday clinical life combined with teaching aids, 4) teaching aids and 5) scientific resources. Student interaction with the posts was measured on the basis of overall subscription, "likes", comments and polls.

Results: 119 (73%) medical students subscribed to the Instagram account showing high acceptance and interest in the use of Instagram for medical education. 43 posts generated 325 interactions. The highest number of interactions was observed for the category "engagement" (15.17 interactions (5.01 SD)) followed by "self-awareness" (14.00 interactions (7.79 SD)). Averaging 7.3 "likes" per post, the interaction was relatively low. However, although the category "scientific resources" garnered the least likes (1.86 (1.81 SD) "likes") of all categories, 66% of participants in the poll were interested in studies and reviews, suggesting that although "likes" help to estimate a general trend of interest, there are facets to interests that cannot be represented by likes. In the conducted Instagram polls 59% of 34 students stated they would prefer more humorous content, 96% of 56 wanted more posts about everyday clinical life, 66% of 41 more information about reviews and studies, 96% of 51 more mnemonics, and 100% of 49 were interested in more content on sensitive topics such as self-care.

Conclusions: Instagram showed a high acceptance among medical students participating in the hematology and oncology teaching curriculum. Students were mostly interested in posts pertaining to routine clinical life, self-care topics and memory aids. More studies need to be conducted to comprehend the use of Instagram in medical education and to define the role Instagram is going to play in the future. Furthermore, evaluation guidelines and tools need to be developed.

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Abstract

Background:

The COVID-19 pandemic made a rapid expansion of novel tools for digital medical education necessary. For the first time at our university medical center, an Instagram account was developed as a tool for medical education and used as a supplementation for the Hematology and Medical Oncology teaching module of 2020/21.

Objectives:

We aimed to evaluate the acceptance and role of Instagram as a novel teaching format in the education of medical students in hematology and medical oncology in the German medical curriculum.

Methods: To investigate the role of Instagram in student education of hematology and medical oncology, an Instagram account was developed as a tie-in for the teaching module of 2020/21. The account was launched at the beginning of the teaching module and 43 posts were added over the 47 days of the teaching module (at least one post a day). Five categories for content were established: 1) engagement, 2) self-awareness, 3) everyday clinical life combined with teaching aids, 4) teaching aids and 5) scientific resources. Student interaction with the posts was measured based on overall subscription, "likes", comments and polls. Approval to conduct this retrospective study was obtained from the local ethics commission of the university medical center Goettingen.

Results: 119 (73%) medical students subscribed to the Instagram account showing high acceptance and interest in the use of Instagram for medical education. 43 posts generated 325 interactions. The highest number of interactions was observed for the category "engagement" (15.17 interactions (5.01 SD)) followed by "self-awareness" (14.00 interactions (7.79 SD)). Averaging 7.3 "likes" per post, overall interaction was relatively low. However, although the category "scientific resources" garnered the least "likes" (1.86 (1.81 SD) "likes"), 66% of participants in the conducted Instagram poll were interested in studies and reviews suggesting that although "likes" help to estimate a general trend of interest, there are facets to interests that cannot be represented by "likes".

Interaction significantly differed between posting categories (P <.001, Welch's ANOVA). Comparing the first category ("engagement") with categories 3-5 showed a significant difference (student's t-test Welch's correction; category 1 vs. 3, P = .01; category 1 vs. 4, P = .01, category 1 vs. 5, P = .001)

Conclusions:

Instagram showed a high acceptance among medical students participating in the hematology and oncology teaching curriculum. Students were most interested in posts on routine clinical life, self-care topics, and memory aids. More studies need to be conducted to comprehend the use of Instagram in medical education and to define the role Instagram will play in the future. Furthermore, evaluation guidelines and tools need to be developed.

Keywords: COVID-19; medical education; distance learning; undergraduate medical education; digital medical education; Instagram; Hematology and Medical Oncology

Introduction

The COVID-19 pandemic continues to have a substantial impact on medical education worldwide. Necessary governmental measures to contain the pandemic required a significant reduction of personal contact between students, their educators, and patients and led to the transfer of most of the medical teaching into the online realm [1]. At the University Medicine Goettingen continuous, albeit strongly reduced bedside teaching was made possible to uphold this integral part of medical education, but most of the teaching was conducted exclusively online via tutorials and live streaming of lectures.

Medical education strives to unite the teaching of scientific facts with the instruction of a good bedside manner and adequate professional conduct. The relocation of medical education into the online realm leads to the conundrum of (1) including medical students in everyday clinical practice, (2) experiencing and learning patient-doctor-interaction, and (3) establishing a sufficient student-teacher connection (Figure 1).

A recent study observed that most medical students already use smartphones and social media for education [2]. Furthermore, a growing number of clinicians utilizes social media for personal and professional purposes [3–5]

Students using social media benefit from learner engagement, customized learning, and opportunities for feedback [6]. Moreover, social media platforms allow diversification of interactions and engagements with students, as they are not limited to the written word as a medium. The Covid-19 pandemic highlighted the possibility to use social media as an effective way to deliver health care education [7].

The different social media platforms each have specific strengths and weaknesses.

Most research has focused on assessing the value of Twitter or Facebook as educational tools. The use of Instagram for medical education has not been extensively studied especially in the field of

hematology and medical oncology [8,9] (Figure 2). The unique selling point of Instagram lies in the strength of visualization and interaction with users, making the platform especially helpful for procedural training and imaging studies. So far Instagram is used in medical specialties such as pathology, plastic surgery, and radiology [7,8,10]. Furthermore, the platform allows insights into medical fields and physician's everyday routines that might otherwise only be gained during shadowing opportunities [7].

Our study aims to explore the use of Instagram for educational purposes in the field of hematology and medical oncology to determine how to best use this platform effectively. We hypothesize that the usage of Instagram could possibly facilitate and improve interaction with medical students during this difficult time. To this end, we created an Instagram account as a tie-in for the hematology and medical oncology teaching module during the winter semester 2020/2021.

Methods

Appraisal of social media in medical education

An appraisal of current literature on the usage of social media in medical education was conducted by searching for original articles found under the MESH-terms "medical education" AND "Twitter/Facebook/Instagram" on PubMed. Studies were sorted by year of publication and country of the first author for visual analysis with Affinity Designer Version 1.9.1 (Serif (Europe) Ltd, Nottingham, UK, Figure 2 and Figure 3.) Only original articles investigating the use of social media in medical education were included. PubMed was chosen as there is no access restriction and the platform provides abstracts.

Account setup and design

During the winter term of 2020/21, a private Instagram account was created as a supplement to the hematology and medical oncology teaching module of the University Medical Centre Goettingen. The account was only made available for medical students enrolled in this teaching module and students were notified about the account via their online class schedule and during the introductory

lecture. After requesting to follow the account, the students were admitted as followers. The

uploaded content on the Instagram account was synchronized to the lecture curriculum.

Uploaded content included: visual comics and mnemonics, introduction to major international

hematological/oncological societies, links to online learning resources, clinical imaging (e. g. blood

slides, X-ray images), guidelines, scientific papers, and personal content sharing titbits of the

teaching staff's everyday clinical practice. At least one post per day was uploaded, except during the

holiday season, where content was uploaded once every two days. Each post was composed of

pictures and a text which sometimes included questions. If students left comments via the comments

section, the teaching staff uploaded a reaction. Overall, five categories for content were established:

1) engagement, 2) self-awareness, 3) everyday clinical life combined with teaching aids, 4) teaching

aids and 5) scientific resources. In the engagement category, content included an introductory

message for the students to the account, holiday greetings, and good luck wishes for the upcoming

exams. The second category (self-awareness) consisted of content on resilience and self-care. The

third (everyday clinical life combined with teaching aids) shared titbits of everyday clinical life such

as transfusion management, blood slides, and treatment of chemotherapy-related side effects. The

fourth category shared clinical findings such as hematopathology images, visual memory aids, and

mnemonics, and CT scans. In the fifth category, studies, scientific articles (original articles and

reviews), as well as hematological and oncological societies were introduced (e. g. the European

Society for Medical Oncology

(ESMO), the American Society of Hematology (ASH)). Approval to conduct a retrospective data

analysis was obtained from the local ethics committee of the university medical center Goettingen

(date: 25.02.2021, approval number 19/2/21).

Determining engagement

Engagement was defined as "like" or comments and calculated for each post separately using

Microsoft Excel® and the following formula: N (interactions per post)/N (follower).

Instagram flash poll

After the students completed the teaching module, an Instagram poll on how the content was received was conducted. The students were informed both orally at a lecture presenting the online teaching module iLearn Onco and in writing via our online script iLearn Onco regarding data collection, storage, investigators, and purpose of the study before the poll was opened. Only anonymous data was collected. The survey was conducted as an open survey. No incentives were offered for completing the poll. Students could answer specific questions individually, explaining the divergent number of participating students in each question. The responses were manually entered into a database (Microsoft excel®) and analyzed. The data was collected over a timeframe of 24 hours.

The poll included the following questions which could be answered with either yes or no: Would you prefer funnier content? Would you prefer more content on the everyday clinical life of hematologists and oncologists? Would you prefer more mnemonics? Would you prefer more content on reviews and studies? Would you prefer more content on sensitive/personal topics?

Statistical analysis

Microsoft Excel® 2013 (Microsoft Corporation, Redmond, WA, USA) and GraphPad Prism® Version 8.0 (GraphPad Software, San Diego, CA, USA) were used for statistical analysis

Results

Social media in medical education is gaining importance

An appraisal of current literature on the use of the social media platforms Twitter, Facebook, and Instagram for medical education showed that social media is gaining importance as an educational tool. The number of studies has slowly increased during the last decade mirroring a shift from exclusively in-person teaching towards the integration of digital resources into medical education (Figure 2). Especially the United States, the United Kingdom, and Arabic- speaking countries are leaders in the field with the highest number of studies (Figure 3).

Account and follower characteristics

During the 47 days of the hematology and medical oncology teaching module, we uploaded 43 posts accompanying our faculty's curriculum. Of 164 students enrolled in the teaching module on hematology and medical oncology, 119 (73%) subscribed to the Instagram account "iLearn Onco". The first category ("engagement") consisted of 6 posts, the second category ("self-awareness") of three, the third category ("everyday clinical life combined with teaching aids") of 14, the fourth category ("teaching aids") of 13 and the fifth category ("scientific resources") of 7 (Figure 4a). 88 (74%) of our followers identified as female, 31 (26%) identified as male.

Interaction

Our 43 posts generated 325 interactions consisting of 315 "likes" and ten comments. The mean number of "likes" per post was 7.33 (5.71 SD) and the mean engagement rate per post 0.06 (0.05 SD). The most liked post had 26 "likes" and the highest engagement rate (0.22). Students used the comment section under the post three times spontaneously and answered questions asked in the comment section seven times.

Interaction characteristics

Of the five different content categories established in this project, we observed the highest number of interactions for the category "engagement" (15.17 (5.01SD) interactions) followed by "self-awareness" (14.00 (7.79 SD) interactions). Posts in the category "teaching aids" (6.85 (3.90 SD) interactions) had a slightly higher interaction rate than "everyday clinical life combined with teaching aids" (6.71(3.53 SD) interactions). The least interaction occurred with posts belonging to the category "scientific resources" (1.29 (1.67 SD) interactions). Interaction significantly differed between posting categories (P <.001, Welch's ANOVA, Figure 4b). Comparing the first category ("engagement") with categories 3-5 showed a significant difference (student's t-test Welch's correction; category 1 vs. 3, P = .01, difference between means -8.45 +/- 2.45, 95%CI[-14.24;-2.67; category 1 vs. 4, P = .01, difference between means -8.32 +/- 2.51, 95%CI[-14.15;-2.49]; category 1

vs. 5, *P* = .001, difference between means -13.99 +/- 2.34, 95%CI[-19.63;-8.13]). There was no

statistically significant difference when comparing the second ("self-awareness") category to any of

the other categories (student's t-test, Welch's correction; category 2 vs 1, *P* = .86, difference between

means -1.17 +/- 5.95, 95%CI[-21.39;19.06], category 2 vs 3, *P* = .32, difference between means -

7.29 +/- 5.59, 95%CI[-30.02;15.44, category 2 vs. 4, *P* = .32, difference between means -7.15 +/-

5.62, 95%CI[-29.62;15.31], category 2 vs. 5, *P* = .15, difference between means -12.71 +/- 5.55,

95%CI[-35.92;10.50]). The third ("everyday clinical life combined with teaching aids") and the

fourth ("teaching aids") category both showed a significant difference when compared to the fifth

category ("scientific resources"; student's t-test, Welch's correction; category 3 vs. 5, *P* < .001,

difference between means -5.43 +/- 1.19, 95%CI[-7.93;-2.93], category 4 vs. 5, *P* < .001, difference

between means -5.56 +/- 1.32, 95%CI[-8.33;-279]). Compared with each other there was no

significant difference (student's t-test, Welch's correction, category 3 vs. 4, *P* = .93, difference of

means 0.13 +/- 1.15, 95%CI[-2.93;3.19]).

Instagram flash poll as a tool for attaining fast feedback

A median of 46 (~38%) of all students who subscribed to the account, participated in the voluntary

Instagram poll (min.: 34, max.: 56). 34 (59%) students stated they would prefer funnier content and

41 (66%) students would have liked more information about reviews and studies. 56 (96%) of

polling students wanted more posts about everyday clinical life and 51 (96%) students wanted more

mnemonics. Of the participating 49 (100%) students were interested in more content on

sensitive/personal topics. Overall, simple Instagram polls offer the opportunity for quick feedback on

how content is received.

Discussion

Although the medical community has shown an increasing interest in the potential of Instagram, its

role in health care is yet to be determined [8,11,12]. As a visual-based tool, Instagram offers unique

possibilities for interaction. As a recent analysis illustrated [11], it can be used for patient education,

patient support groups, accessibility, and medical education of either peers or medical students. We hypothesized that using Instagram as an addition to our online teaching curriculum could facilitate and improve interaction with our medical students during the Covid-19-pandemic. Overall, 119 (73%) of all students in the teaching module subscribed to the Instagram account, which shows a high acceptance and interest in the use of Instagram for medical education that is in line with the current data [11,12]. Albeit the good acceptance of the account engagement rates as measured in "likes" for specific posts were low. Furthermore, results of the Instagram poll were in part divergent to "likes" with students stating they would like more content pertaining to a category that had gotten little "likes".

As all students had access to the internet either at home or provided by the faculty and students were required to use the official online learning platform of the faculty, we surmise, that students not using Instagram actively decided against it.

With an average of 7.3 "likes" per post, interaction was relatively low [13,14]. The highest interactions were achieved in the category "engagement" and "self-awareness". Both categories featured content that emphasized educator- and peer-to-peer-connection and self-care. As this study took place during the COVID-19 pandemic, these results might reflect the current zeitgeist. Three posts addressed sensitive topics concerning the occurrence of depression and suicidal tendencies in medical students (23 "likes"), sleep deprivation in medical students (5 "likes"), and substance abuse among medical students (13 "likes"). These were the only contents with spontaneous positive feedback either in the comment section or by a comparatively high number of "likes". This might indicate that social media can be used to raise awareness for self-care and offer the possibility to advertise low-threshold services (e. g. contact of the student counselor, counseling hotlines) for medical students.

The current literature on the use of Instagram in medical education and medicine in general measures

interaction and engagement in "likes"[10]. The number of "likes" represents an estimate of how interesting the content is to the subscribers and on this basis, administrators decide what content to upload [10]. In our analysis, the fifth category which contained information on current clinical trials, important reviews and studies, and online presentation of hematology and oncology platforms had significantly less engagement and fewer "likes" than all other categories. However, in a separate flash poll conducted on Instagram 66% of the participating students were interested in more studies and reviews. Those findings suggest that even though "likes", as currently used in the literature and by industry as a measure for "interest" of followers, help to estimate a general trend of interest, there are facets to interests that cannot be represented by "likes" [13].

Thus, to determine what students are interested in, a more detailed evaluation needs to be conducted.

Limitations

There are a few limitations to this study. First, the sample size was relatively small and interaction rates were low. The account was kept private ensuring a safe space for students to learn and interact. Thus, the number of students was limited by the number of students attending the teaching module. A reason for initially low interaction rates might be, that this was the first time Instagram was used as an addition to the normally employed modes of medical education at the University Medicine Goettingen, so neither students nor teaching staff was familiar with this tool as a means of education in this context. We assumed a basic knowledge of how to use and interact via Instagram as many students already use social media in their personal lives. However, we cannot completely rule out, that the decision not to use Instagram was based on a lack of training on how to use the platform. Another limitation is that the Instagram account was created with more than one intention in mind. On the one hand, the goal was to supplement the online teaching module, on the other hand, we aimed to connect with students in times of social distancing and give them a feeling of inclusion into everyday clinical practice. To achieve both goals, uploaded content differed greatly and therefore complicated evaluation.

There is also a limitation in the scope of the review of the current literature on social media in medical education. A more comprehensive overview would require searching further databases such as Medline and Scopus.

Conclusions

Instagram is a modern tool easily integrated into medical teaching that allows continued personalized online contact between educators and students during the COVID-19 pandemic. To fully comprehend the role Instagram can play in medical education in the future, more studies need to be conducted. Furthermore, evaluation guidelines and tools need to be developed.

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Figures and Figure Legends:

Figure 1:   Integrating digital teaching tools. The advantages of digital vs. in-person-interaction.
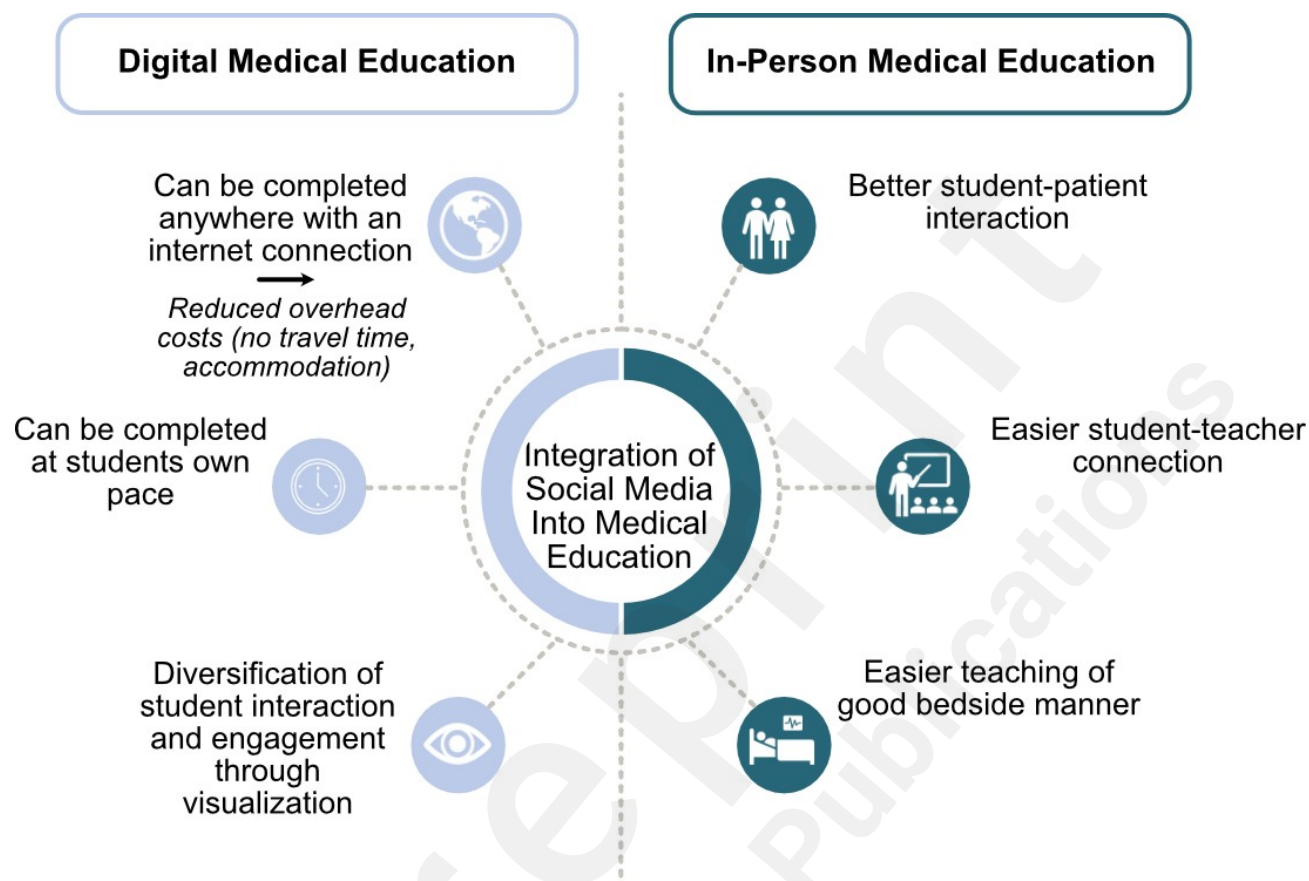

Figure 2:   Increase in importance for medical education of social media platforms in the last

decade. Timeline of original articles concerning specific social media platforms in the
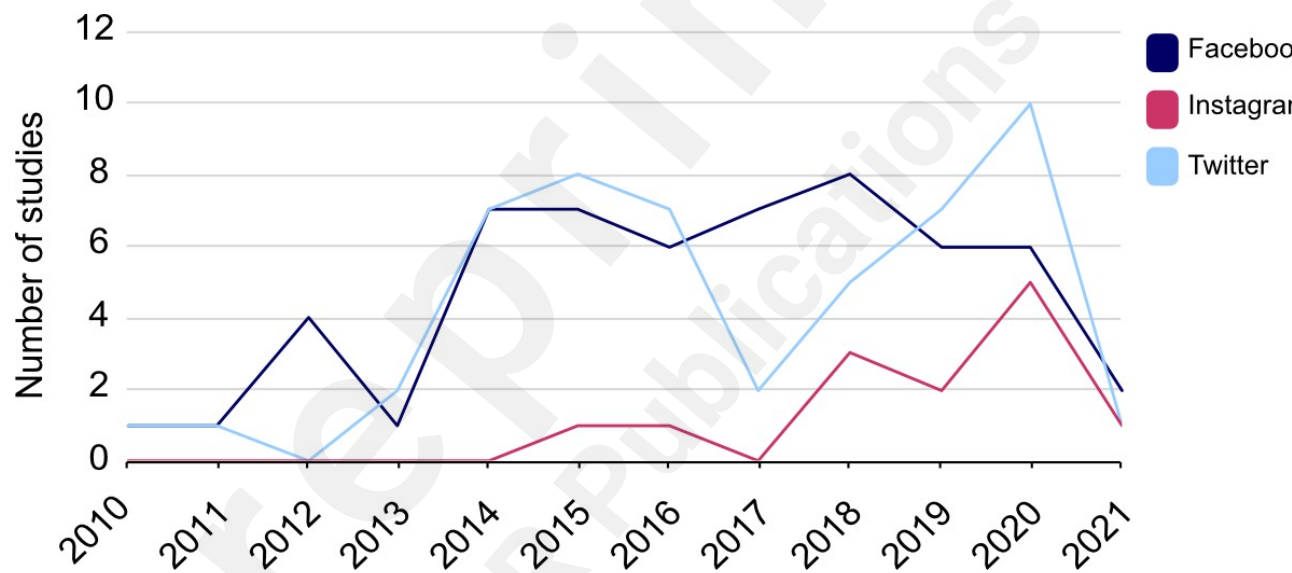
last decade.

Figure 3:   Number of original articles concerning the use of social media in medical education

by country. Total number of original articles represented by circle size; proportion of

specific social media platforms represented by color. The US, UK and Arabic nations

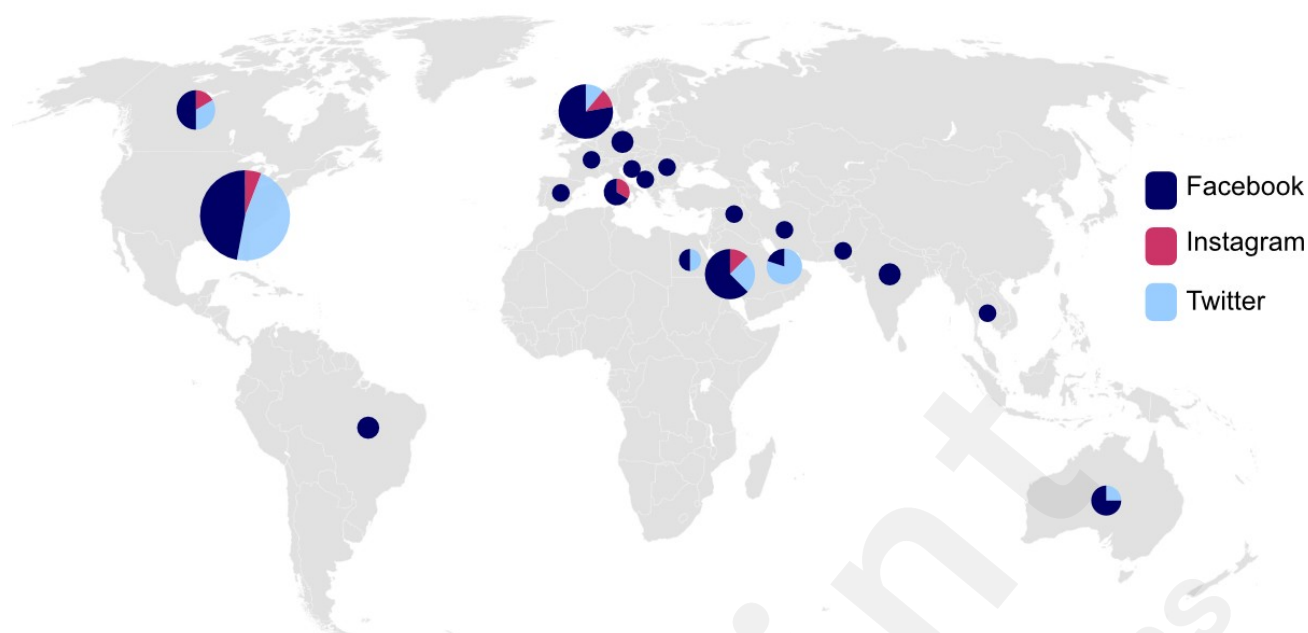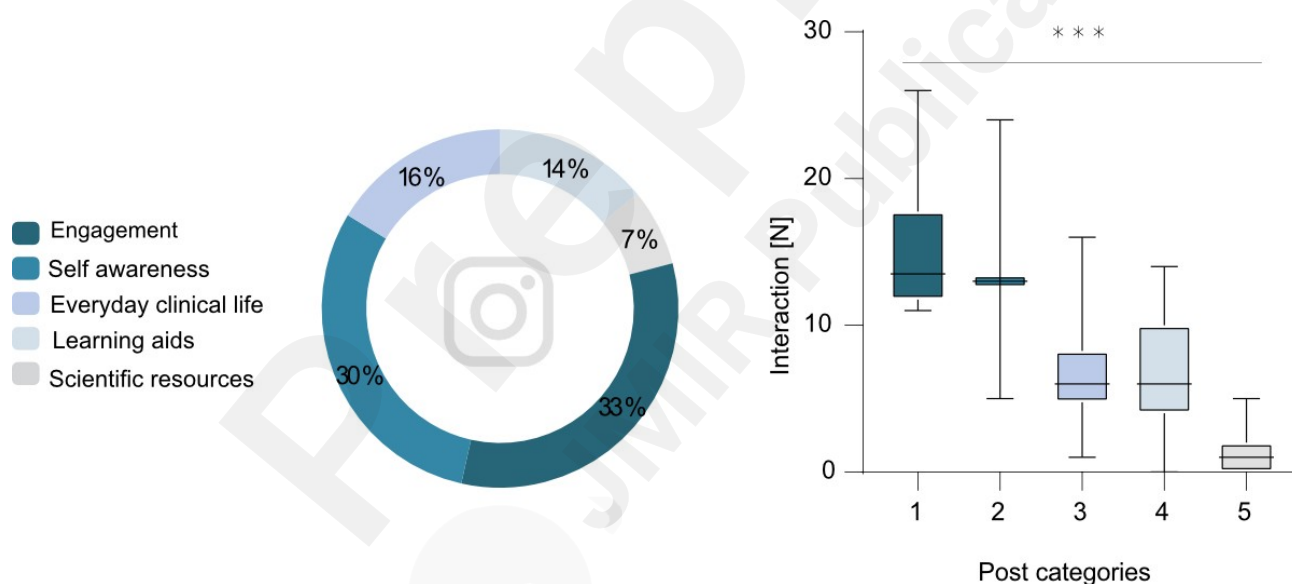are hubs concerning the integration of social media platforms into medical education.

Figure 4:   (a) Categories and proportion of content uploaded. (b) Interaction of students to

specific categories differs significantly (Welch's ANOVA, p<0.01).

Supplementary Files

Figures