

Pharmacy Club: A Model for Organizing a Regular Forum for Science and Research Communication in Higher Education Institutions in Resource-Limited Settings.

Sahar A Alrayah

University of Khartoum

Abdelrahim M Mahjob

University of Khartoum

Azza A Abuelgasim

University of Khartoum

Bashier Osman

University of Khartoum

Rehab Ahmed (✉ rehabbashaaree@gmail.com)

University of Khartoum Faculty of Pharmacy <https://orcid.org/0000-0003-2476-469X>

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Abstract

Background

Extracurricular academic activities such as journal clubs are extremely important for research education, professional development, science communication and discussion. Yet, they are lacking in countries with short and limited resources such as Sudan. Pharmacy club is a platform set to meet some of the need to those activities. The aim of this work is to describe how this club came forth, the activities presented thus far in the club, present feedback from the participants and share some lessons drawn over the years.

Methods

We started Pharmacy Club late in 2012 as a platform where basic and clinical research and other topics related to the field of pharmacy are shared and discussed publicly with everyone interested. We analysed the Pharmacy Club data archive which contains details of the lectures and activities organized from 2012 to 2020. A questionnaire was designed and sent to the participants in November 2019. Analysis and description are performed using Microsoft office excel 2019.

Results

Pharmacy Club has organized more than hundred extracurricular lectures through complete voluntary work. Analysis of Pharmacy Club's archive revealed prominent diversities in many aspects related to the type of topics presented, and presenters' background, nationalities (12% international presenters), affiliations, and academic qualifications. Questionnaire results highlight the importance of using different advertisement strategies to reach out to the people. Among other reasons that deter folks to participate regularly, timing of the events as expected is the main challenge.

Conclusion

There is a need for fora in the third world academic institutions where research and scientific topics could be shared among the like-minded fellows. Pharmacy club is a model of this fora with almost 8 years of voluntary and free service and many lessons can be drawn from its experience.

1. Introduction

"Extracurricular activities" is a term used frequently in literature without a consensus or a very precise definition. In one of the definitions, extracurricular activities are defined as "*academic or non-academic activities that are conducted under the auspices of the school but occur outside of normal classroom time and are not part of the curriculum*" (Bartkus et al. 2012). For instance journal club (Topf et al. 2017) can be an example of such extracurricular academic activities and it is widely known to improve knowledge and skills in the medical field (Sánchez-Mendiola et al. 2015) and academic institutions. Another example is conferences. Participating in academic conferences has enormous impacts in the life and the career of researchers and scientists (Oester et al. 2017 and Nicolson 2016). Such activities

despite being crucial for soft skills development – and even technical skills - for future career success, most of the time they are not a requirement for academic degrees achievement, and they are optional activities with no academic credit. The need for such extracurricular academic activities is tremendous in countries where research and education are poorly funded (Topf et al. 2017). Considering the scarcity of most of these activities in Sudan, the idea of the Pharmacy Club came into existence and it is perceived that the club is to meet some of this need.

1.1. Pharmacy Club history

The Pharmacy Club at the Faculty of Pharmacy, University of Khartoum can be defined as a platform where academic extracurricular activities can be hosted and shared. It is a forum for presentation and discussion of basic and clinical research findings in the medical and pharmaceutical fields. It is also where relevant general talks are welcome. The Pharmacy Club does not only target pre- and postgraduate pharmacy students, but also all Sudanese pharmacists and anyone that is interested. The club is a weekly event habitually held on Thursdays at 13:00 at the Faculty of Pharmacy University of Khartoum. However, whenever needed; the time of the event may be changed to suit the presenter or in response to other factors.

It is stated and shared publicly on our Facebook page that *“Pharmacy club is working towards a future of efficient collaboration between academia, the industry, and the community for the sake of better health in Sudan”*. And *“its mission is to help communicate research and science in the field of pharmacy and related disciplines to establish networks and relationships between relevant people. The club stresses the total development of Pharmaceutical research in Sudan. The pharmacy club team strives to have all pharmacy alumni and postgraduate students from all over the country to be involved in the club activities. The Pharmacy Club main goals include bringing together relevant and related people to encourage communication and discussion about mutual topics which may lead to collaboration between individuals and/or organizations working in the same areas. Another particularly important goal is to promote science communication; not only for its well-known importance to development; but also, as a responsibility of scientists”*.

The main activities are presentation of general health topics or scientific research findings by the faculty staff or other undergraduate, graduate, M.Sc., or PhD students/holders. Also, organization of workshops to develop the profession and invitation of scholars and experts in pharmacy to present their work and share their experiences. Series of presentations are sometimes organized. The duration of the presentation varies according to the presenter and the topic. It usually ranges from one to two hours.

The pharmacy club was founded in Dec 2012 by 3 staff members. Till Dec 2016, the club was coordinated by one of the founders who sometimes get assisted by other co-founders. In Dec 2016, the first coordination team was recruited and since then the club is coordinated by teams led by the club founder. The coordination team is responsible for inviting scholars and experts to share their knowledge, setting up schedules, advertisement of the club events, logistics and archiving.

The club is an open platform and anyone relevant is welcomed to present. The presenters are usually and most likely invited personally by coordinators. Simply whenever wherever the coordinator meets a potential presenter, he tells them about the club and invites them to share what they have in the club. Sometimes an online call for presenters is opened. Those who apply are then contacted to organize their participation. The pharmacy club is completely a voluntary activity. Both presenters and coordinators are volunteers and are not paid for their participation. The club is open and free for everyone to attend. The venue of the club is provided by the Faculty of Pharmacy, University of Khartoum for free as part of its continuous support to extracurricular activities. The coordination expenses are minimal, including internet connection, printing some papers such as printed invitations, and reception. Those expenses are usually provided by the administration of the Faculty of Pharmacy and the coordination team as a donation to the club.

The pharmacy club is advertised mainly online through social media, especially a Facebook page. Invitations are also shared through WhatsApp and often sent by email to a list of the pharmacy club followers. The presentations' announcements are also posted on faculty boards. The club has recently created a channel in YouTube and other accounts in Twitter, Instagram, Telegram and LinkedIn. The club also has a link in the official website of the faculty of pharmacy, university of Khartoum.

In the early beginning only one post per event organized was usually shared on Facebook. This post contains information regarding the event (time, venue, topic title, brief bio, name, and a picture of the presenter). Now we changed the strategy so that we share three posts per event to increase the engagement and the reach out. The first post is a brief introduction to topics planned to be presented in the club. The second is announcements of the events and the third is a brief report including photos taken during them.

The pharmacy club events are archived on the website of the Faculty of Pharmacy in addition to a google sheet document in the club's google account. The sheet contains information about the presentation such as the topic title and topic category; information about the presenter such as name, academic degree, specialty, nationality, and contact information; besides date and time of the event. Photos are taken during the event to support both documentation and advertisement for the club.

In this paper we present the experience of pharmacy club and the lessons learnt over the past 8 years of voluntary work. Analysis of the archive and a questionnaire of the engagement of the audience and their responses and impressions are also reported.

2. Methods

We started to organize Pharmacy Club lectures and events in Dec 2012 and continued to do so till March 2020. The information of these presentations is saved in the pharmacy club archive. We descriptively analyzed this information according to date, scientific category, and presenter's information (nationality, profession, academic degree, and occupation). We also conducted a survey in November 2019 to explore the engagement of pharmacists in Khartoum state with the events organized by the Pharmacy Club. We

asked participants about whether they knew about the club before, whether they participated in it or not and why. The survey was distributed through Facebook, WhatsApp, and emails (367 emails sent to Pharmacy Club Followers who are signed up in the club contacts list). We analyzed data from the archive and the survey using Microsoft Office Excel 2019.

3. Results

3.1. Data from the Pharmacy Club Archive

Out of 116 lectures planned, there were 112 presentations successfully delivered. Four events were cancelled for compelling reasons. The rest were presented by a total of (95) presenters. The number of events successfully organized varied between years and between quarters within the years. The years 2013, 2014 and 2018 were the years when the club was most active (Fig. 1). The topics presented fell within at least (15) different categories (Fig. 2). Some categories such as Phytochemistry, medicinal chemistry and pharmacy practice have been covered by many presenters as much research is being conducted in these areas.

Figure 1: Presentations count over time: The distribution of a total of (112) presentations in the period 2012–2020. Presentations count is in the X-axis and Time (quarter and years) is in the Y-axis.

Figure 2: Categories of topics covered in Pharmacy Club: Presentations categories are in the X-axis and Lectures count is in the Y-axis.

The fact that the Pharmacy Club is open, free and easily accessible forum for everyone relevant and interested to present has contributed to its continuation and sustainable performance. One third of the total presentations were delivered by health professionals other than pharmacists (Fig. 3, a). This also has resulted in the splendid diversity in specializations and occupations of presenters who participated and the topics they discussed. For instance, an engineer once presented a lecture about applications of nanotechnology in Pharmaceutics. The presenters who were affiliated to the faculty of Pharmacy, University of Khartoum (assigned as staff in Fig. 3, b) represented a about one quarter of the presenters. Those who assigned as others (Fig. 3, b) were from diverse organizations including the industry, the community, the government, and other academic institutions. Presenters' qualifications clearly span the whole academic spectrum starting from professors who were as follows: 15 were full Professors, 3 associate professors, and 11 assistant professors all the way down to B.Pharm holders. The information of the qualifications of (7) presenters were unfortunately missing (Fig. 3, c).

Figure 3: Credentials of the Presenters: **a.** Out of the (95) presentations, more than two thirds (67 presentations, 71.3%) were presented by pharmacists. While (27 presentations, 28.7%) were presented by other related professionals. **b.** Out of the (95) presenters, (24.5%) of presenters were staff members of the faculty of pharmacy, University of Khartoum. While (75.5%) were from other related professionals. **c.** The academic degree of presenters is in the X-axis and Count of presenters is in the Y-axis.

The Pharmacy Club could reach international presenters with foreign nationalities/residencies (Fig. 4). Six of those were Sudanese with dual nationality or foreign residencies. The other 6 were foreigners from Germany, Switzerland, Netherlands, Sweden, UK, and India. All of those came to Sudan as external examiners, for collaboration with other bodies and for some other purposes except the one from Sweden was hosted online through a web conference system named Mconf. **Figure 4: Pharmacy Club global outreach to presenters:** Out of the (95) presenters, (12) were from outside Sudan.

3.2. Engagement of pharmacists in Khartoum state in the Pharmacy Club

Before alluding to the analysis of the questionnaire, it is important to state that the questionnaire was filled online, and the duration was 21 days (in November 2019). Almost three quarters (73%) of those who responded to our survey have heard of us before (Fig. 5, a). One third (35%) of those first knew about us from Facebook. Pharmacy Club uses other advertisement tools such as the website of the Faculty of Pharmacy, University of Khartoum and the Faculty's advertisement boards and these collectively seem to have attracted 19% of the audience. However, personal recommendations have attracted most of our audience as 42% of those who responded to our survey and already knew about our events first knew of the club from friends and colleges (Fig. 5, b).

Figure 5: Outreach: a. Almost three quarters (95 respondents, 73%) of those who filled the survey said they were familiar with the Pharmacy Club and its activities. b. Out of these (95) respondents, (40 respondents, 42%) said they first knew about the Pharmacy Club from their friends or colleges. In the second place came Facebook (33 respondents, 35%). Then came other means of announcements as follows: the official site of the Faculty of Pharmacy, University of Khartoum (10 respondents, 11%), the advertisement boards at the university (8, 8%), WhatsApp (2 respondents, 2%) and lastly there were other answers including Google search (1 respondent, 1%) and not sure (1 respondent, 1%).

Slightly more than half (55%) of those who filled the survey and knew about us before have participated in at least one event held by the club (Fig. 6, a). The rest (45%) of those who filled the survey and knew about us before didn't attend any of our events for many reasons. No wonder time constraints stated to be the main reasons by the majority (79%) of the respondents (Fig. 6, b) for their inability to attend.

Figure 6: Attendance of the survey respondents and reasons for absence: a. Out of the (95) respondents who said they were familiar with the club, more than half (52 respondents, 55%) were found to have attended at least one event of the Pharmacy Club. b. Out of the (43) respondents who said they did not attend any of the Club events, 79% said that they never attended before due to time constraints, 10% said that the presented topics did not interest them, 7% said they did not attend due to poor advertising among other few reasons as shown in the figure.

4. Discussion

The contemporary world of science is encouraging data sharing (Carr and Littler 2015) and open access to this data (Smith et al. 2017). A step further down this road is to establish local fora where people with the same interests could discuss, and disseminate knowledge, research outcomes and skills among them. There are many barriers to organizing regular conferences and meetings in Low- and Middle-Income Countries (LMIC) especially those affected with conflict and years long wars. Moreover the same reasons serves as obstacles that curb participation in international scientific events (Arend and Bruijns 2019). These activities are known to provide networking for the like- minded people and enrich one's knowledge and expertise. Pharmacy club has tried to bridge some of the gabs and served as a platform where students, researchers, stakeholders amongst others could present and network.

The Pharmacy Club is making a noticeable progress in achieving its mission providing a platform for communications of research findings in the field of pharmacy disciplines and health sciences in Sudan (Figures 1 and 2). The Pharmacy club could sustain a consistent performance most of the time since its foundation in 2012 till it has been halted by the Sudanese revolution in 2019 (Berridge 2020) and the current COVID19 pandemic (Anon n.d.) in 2020 (Figure 1). The fluctuations in performance can be attributed to many reasons. For example, in 2015 & 2016 the club founder and the only coordinator then was not available. This dramatically affected the performance and that was the motive to recruit the first volunteers to form a coordination team to be in charge. The variation within years could be attributed to the fact that the club is linked to the university calendar. It is also sometimes affected by availability of volunteer presenters.

To foster diversity, the pharmacy club has engaged different presenters with diverse backgrounds. (Figures 3). It has even been able to attract international presenters which comprised 12% of the total presentations (Figure 4). The club could engage with a wide spectrum of pharmacists (Figure 3, a). The Pharmacy Club media strategy is mainly based on online advertising with social media in the core of it (Figure 5). We were focusing on Facebook as it is the most popular platform in Sudan, and we are working to expand our online presence.

The Pharmacy Club presentations list can be considered as a reflection of research map in Sudan. (Figure 2). Trendy topics came on the top of the presentation categories rank list. As Sudan is a country with diverse flora (Harrison and Jackson 1958), it is normal for the phytochemistry to be on the top of the list. It is obvious that by sharing these lectures with postgraduate students we contribute to the building of research skills and capacity. They will be able to have a good sense of what research is like, and they will develop a healthy perceptions and culture about. Being able to deliver lectures about research methodology and writing is of vital importance as it's been found that the weak knowledge in this area acts as a barrier to research in low and middle income countries (Dadipoor et al. 2018, Unnikrishnan et al. 2014, Mujtaba Alsied and Winis Ibrahim 2017). Lastly Pharmacy Club inspired four other pharmacy schools (3 in Khartoum state & 1 in Aljazeera state) to establish similar clubs. This is considered as a milestone in science communication in pharmacy schools to the Pharmacy Club team.

4.1. Lessons learnt

- I. **Have a clear vision and mission:** Of course, the vision is by definition a future state of the club and we might be far distant from achieving the vision stated due to factors mentioned in different points above related to the country. However, the mission was going well until hampered by the Sudan revolution and COVID 19 pandemic. Clear vision and mission statements serve as effective tools for strategic planning.
- II. **Make partnerships and get endorsed:** From its very start, the Pharmacy Club could gain the support of the Faculty administration, through years it could sustain this trust. Always, the support of the administration of your school is a good opportunity to invest in since extracurricular activities are generally considered an independent and important function of higher education in modern universities (Ivanova and Logvinova 2017). The Pharmacy Club was also able to build partnerships with some local associations that contributed to its success. Partnership is a win-win collaboration and can be set with for example small private institutions or people who provide for-profit services. They can provide training or lectures for free and in return they get free advertisement for their businesses when sharing it publicly with your audience.
- III. **Specify a theme yet be open to invite anyone:** being specialized in health sciences helped the pharmacy club earn success. Being open to inviting anyone relevant to the scope of the Pharmacy Club helped very much in attracting the presenters. However, the more specialized your theme is, the more success you will achieve.
- IV. **Plan your schedule as early as possible ahead of time:** In contexts like that of Sudan with people struggling in their daily busy lives and with no immediate material benefits gained from such activities, it may be so difficult to participate in. Firm venue, regular time and early advertising encourages more people to adjust their schedules to be involved in your activity and may even be regular attendees. Early scheduling with alternative planning will aid so much in sustaining a consistent performance.
- V. **Work in team:** the teamwork divides the coordination load between many persons; hence tasks are more likely to be achieved satisfactorily and on time. It also guarantees that if one coordinator is busy, the activity will not stop, and his load will be taken by other coordinators. It is important to work in harmony or the team can become a load itself. So, you may need to consider composing your team according to your needs, setting up strategy that suits your own context, creating an environment that embrace similarity and respect difference in your team, ensuring clear but flexible task distribution, encouraging your team to be active and proactive and building trust by sharing old experiences.(Salas et al. 2015).
- VI. **Use social media to improve reach out & engagement:** An article published by Emily & Margarita about social media as engagement tool in education identified the following as important components of developing a sustainable social media strategy: “establishing goals and objectives, identifying target audiences, developing content strategy, activities planning, identifying roles, and analyzing ongoing performance”(Chen and Divall 2018). Based on our experience, the same applies for our activity: Having a clear strategy for our social media platforms based on our understanding

of our audience and a clear posts plan that attracted them to our activity led to success of our predefined goal.

- VII. **Archive your work:** Archiving is power. The availability of information about the past is the pathway to a brighter future. Your experience is a model for those aiming to achieve similar goals. Mark Greene borrowed the words of Theodore Schellenberg: "Use is the end of all archival effort"; to argue for the importance of usability & accessibility of archives (Beaumont et al. 2004). The Pharmacy Club has always considered this in its archiving plan. Our archive is accessible to everyone through the website of the Faculty of Pharmacy, University of Khartoum. One mistake that we regret it happened is that we did not ask the presenters to let us have the material presented. It occurred that once or twice, attendees have asked if we could give them the material. It is when we realized the importance of having a copy of the presentations kept with us. So, our advice is to pay attention to this and better yet try best to make it accessible online publicly
- VIII. **Encourage dialogue between your presenters and audiences:** The Pharmacy Club has always considered the activities with greatest interactions between the presenters and audience as the most fruitful ones. This will not only add to your presenters, as they would listen to different points of view from different perspectives and thus learn themselves from the activity, but also will give your audience a feeling of amusement and ownership of your activity (Illingworth 2017).
- IX. **Be self-motivated, enthusiastic, and committed:** the voluntary coordination of activities such as the Pharmacy Club, especially in resource limited settings, is not an easy job. It is time consuming and can be devastating sometimes. Enthusiasm, motivation & commitment are very important factors in the success of long-term projects (Prokop and Illingworth 2016). So, remember to never give up.
- X. **Certification:** We believe the ability to provide attendance and participation certificates will positively impact sustainability of extracurricular activities like the one under study. We did not have enough resources to provide certificates. Securing funds is necessary to be able to.

Declarations

Availability of the work data

Anyone interested is welcome to ask the corresponding author for the data used in this work.

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Author information (Affiliations)

Department of Pharmaceutics, Faculty of Pharmacy, University of Khartoum, Khartoum 11111, Sudan.

Rehab Ahmed.

Department of Pharmacology, Faculty of Pharmacy, University of Khartoum, Khartoum 11111, Sudan.

Basheir Osman.

Pharmacy Club, Faculty of Pharmacy, University of Khartoum, Khartoum 11111, Sudan.

Sahar A. Alrayah, Abdelrahim M. Mahjob, Azza A. Abuelgasim, Bashier Osman and Rehab Ahmed.

Contributions

RA conceptualized the idea of the paper and assigned the tasks to the other authors. SAA and RA have written the manuscript, SAA designed the questionnaire, AMM analyzed the data, AAA curated and maintained the data updated, and BO revised the manuscript. All authors have commented and contributed to the final draft. All authors read and approved the final manuscript.

Corresponding author: Rehab Ahmed (rehabbashaaree@gmail.com)

Ethics declaration

This work is based on the analysis of the archive of pharmacy club data besides the online held questionnaire which was anonymized hence neither specific ethics approval was required nor consent for publication.

Conflict of interest None to be declared.

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Figures

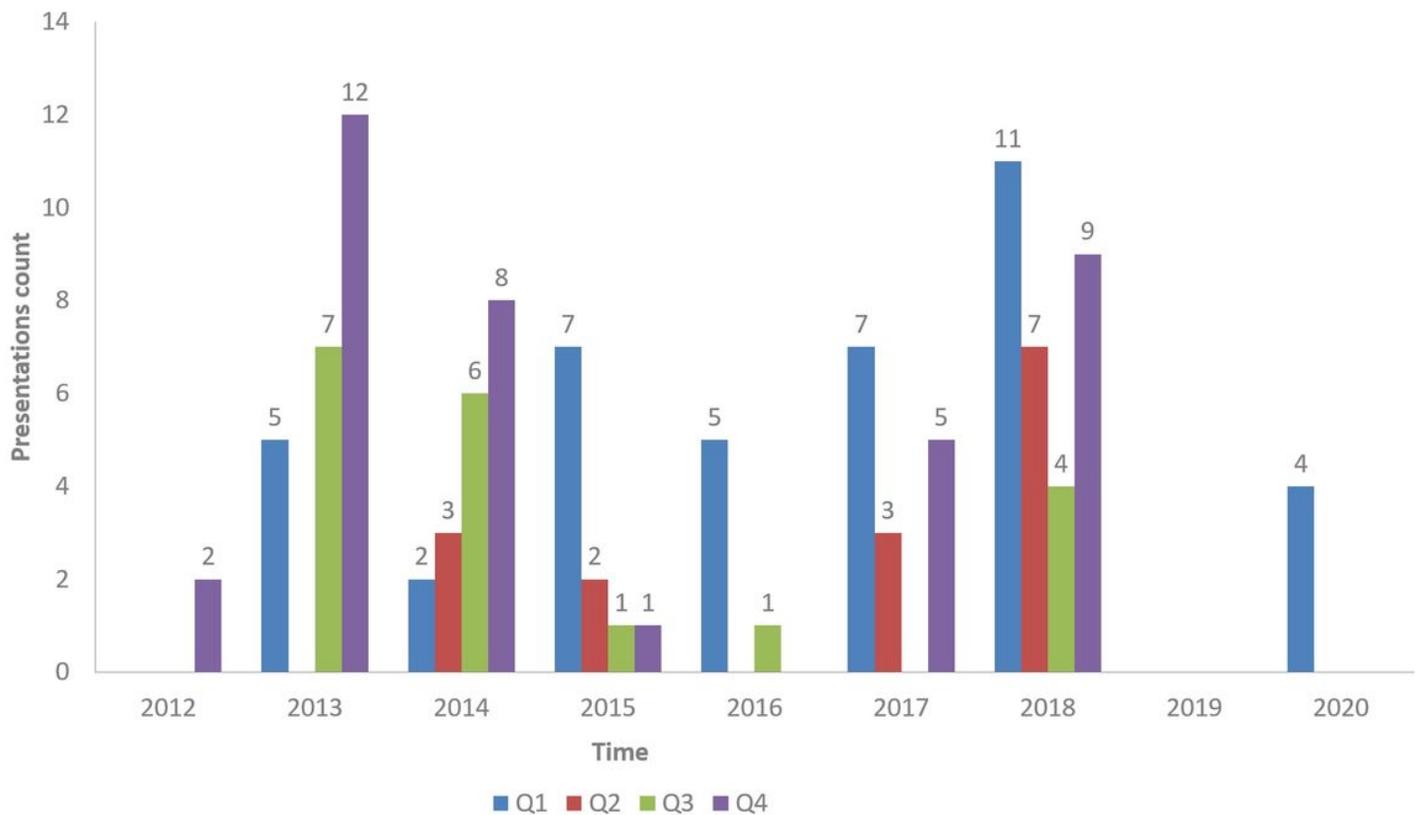


Figure 1

Presentations count over time: The distribution of a total of (112) presentations in the period 2012- 2020. Presentations count is in the X-axis and Time (quarter and years) is in the Y-axis.

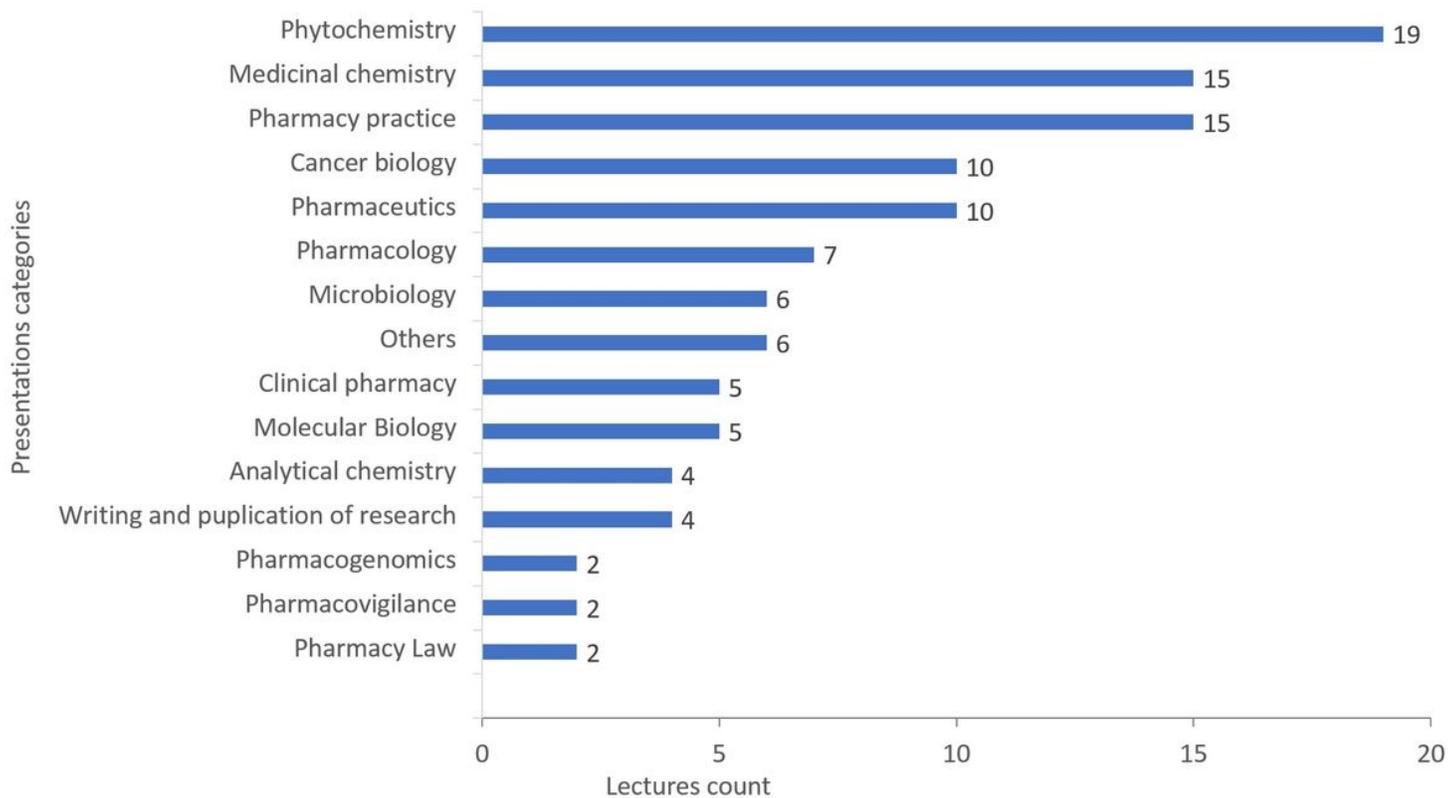


Figure 2

Categories of topics covered in Pharmacy Club: Presentations categories are in the X-axis and Lectures count is in the Y-axis.

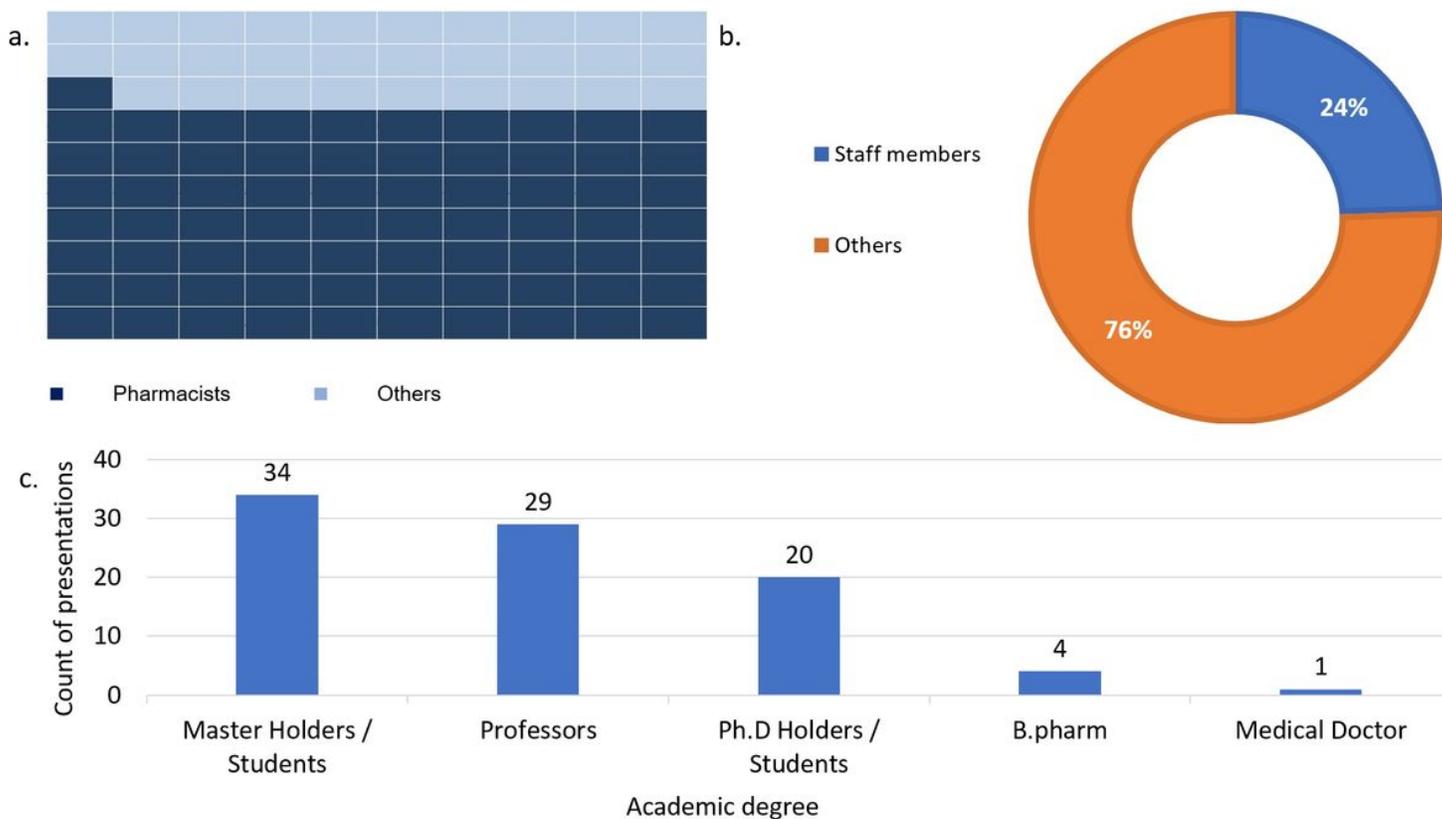


Figure 3

Credentials of the Presenters: a. Out of the (95) presentations, more than two thirds (67 presentations, 71.3%) were presented by pharmacists. While (27 presentations, 28.7%) were presented by other related professionals. b. Out of the (95) presenters, (24.5%) of presenters were staff members of the faculty of pharmacy, University of Khartoum. While (75.5%) were from other related professionals. c. The academic degree of presenters is in the X-axis and Count of presenters is in the Y-axis.

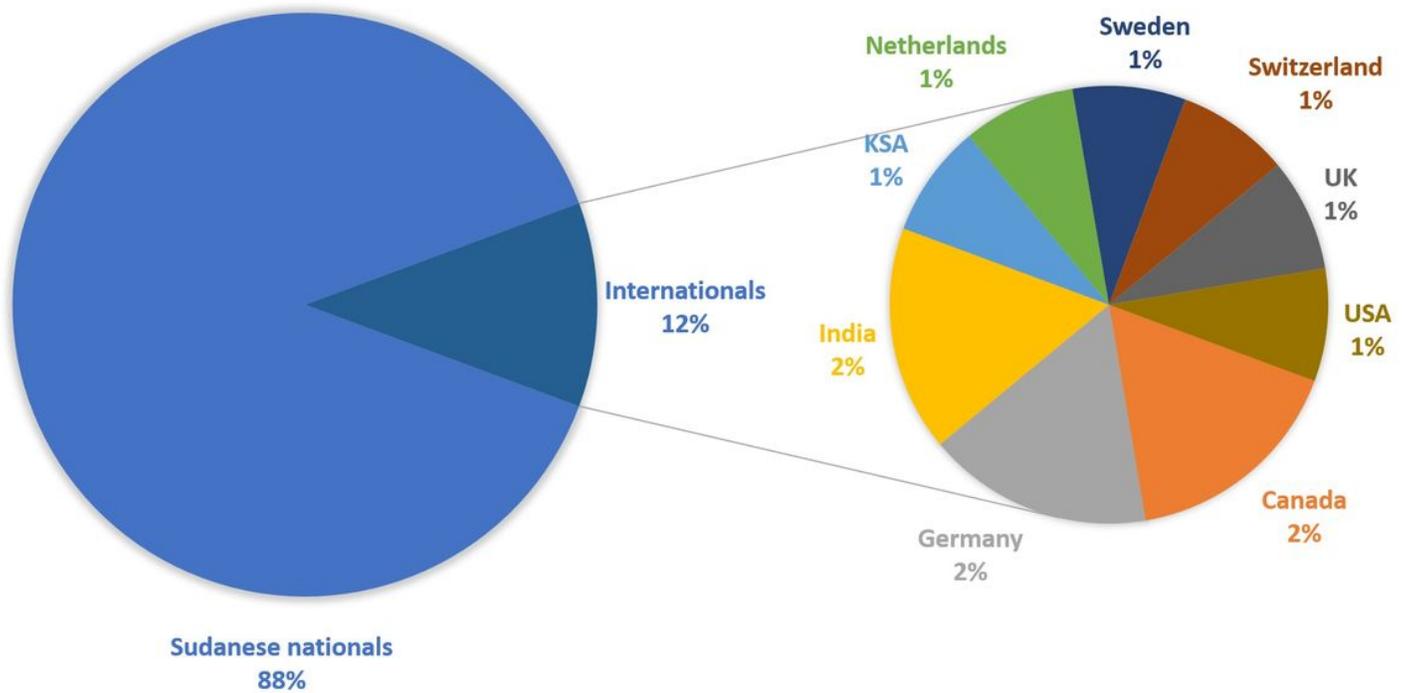


Figure 4

Pharmacy Club global outreach to presenters: Out of the (95) presenters, (12) were from outside Sudan.

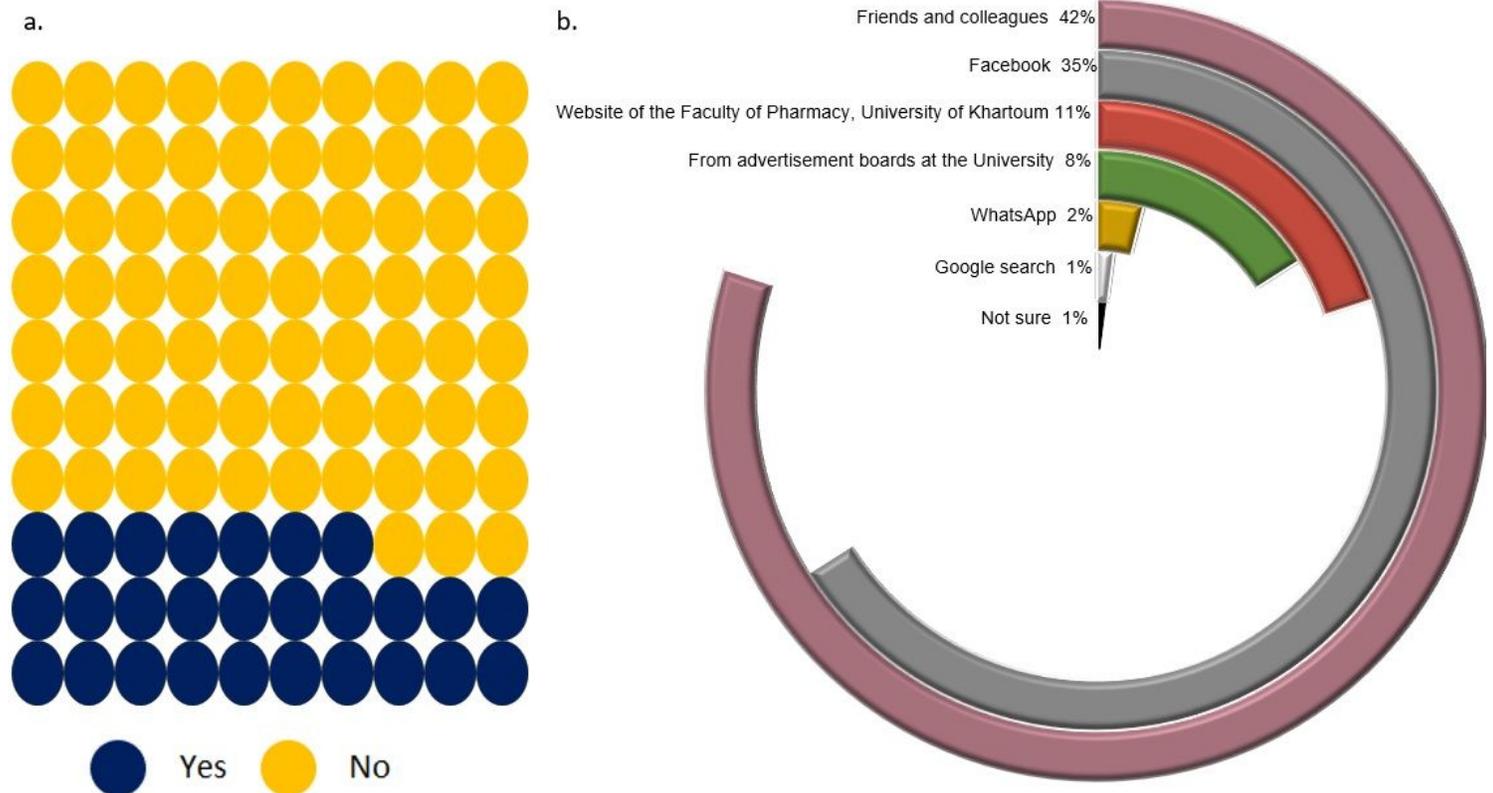


Figure 5

Outreach: a. Almost three quarters (95 respondents, 73%) of those who filled the survey said they were familiar with the Pharmacy Club and its activities. b. Out of these (95) respondents, (40 respondents, 42%) said they first knew about the Pharmacy Club from their friends or colleges. In the second place came Facebook (33 respondents, 35%). Then came other means of announcements as follows: the official site of the Faculty of Pharmacy, University of Khartoum (10 respondents, 11%), the advertisement boards at the university (8, 8%), WhatsApp (2 respondents, 2%) and lastly there were other answers including Google search (1 respondent, 1%) and not sure (1 respondent, 1%).

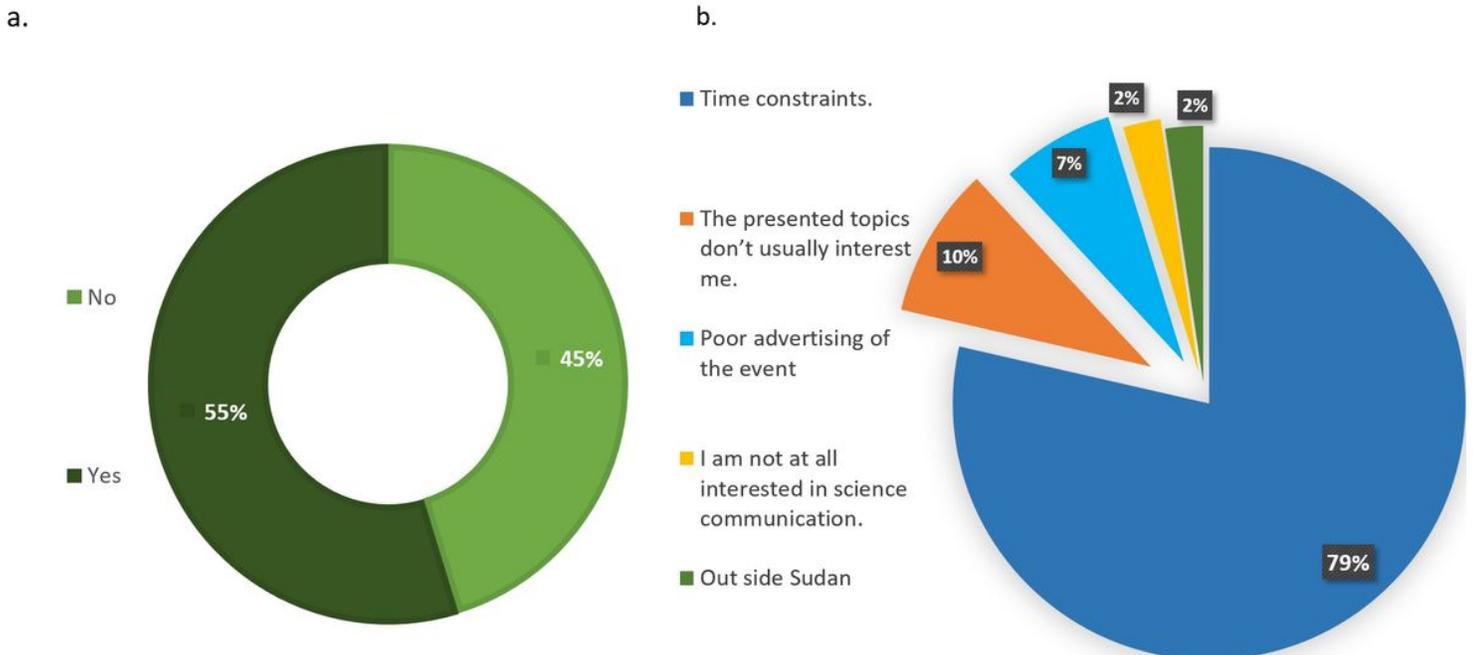


Figure 6

Attendance of the survey respondents and reasons for absence: a. Out of the (95) respondents who said they were familiar with the club, more than half (52 respondents, 55%) were found to have attended at least one event of the Pharmacy Club. b. Out of the (43) respondents who said they did not attend any of the Club events, 79% said that they never attended before due to time constraints, 10% said that the presented topics did not interest them, 7% said they did not attend due to poor advertising among other few reasons as shown in the figure.