NephroConnect: Patterns, Preferences, Barriers, and Potentials in the Global Nephrology Community's Social Media Landscape

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Introduction

In today's world, the internet has undoubtedly transformed the world into a small village with nearly 66% of its population having access to the World Wide Web.[1] In the past few years, social media platforms have assumed an important role, representing a major reason for which the global population seeks and maintains internet access. Indeed, with an average daily usage of 151 min/d in 2022 and 147 min/d in 2021, social media has had a deep impact on people-to-people communication.[2] Recently, scientific societies, academic institutions, and individuals have resorted to social media platforms and developed digital tools for educational purposes. This revolutionary trend was accelerated by the advent of the COVID-19 pandemic. Learning materials in the form of webinars, podcasts, tweetorials, e-quizzes, tweet chats, visual or video abstracts, and online courses are now increasingly available through e-learning platforms. As compared to traditional methods of education, they allow both simultaneous and different modes of interaction not only among health care workers but also patients with chronic kidney disease and their caregivers. e-Learning is also better suited to keep up with the rapid pace required for efficient dissemination of new knowledge and it satisfies hunger for instantaneous, anyplace learning. However, it is also important to appreciate that there are pitfalls from the indiscriminate use of social media. It is therefore imperative that all stakeholders of e-learning maintain a keen sense of commitment in maintaining veracity of the information disseminated and not overload consumers with content. The ISN social media team is a group of committed individuals voluntarily working together to bring quality online education via social media platforms to the nephrology community. To better understand the needs and gaps in the delivery of high-quality content to users, we conducted a large-scale, descriptive, cross-sectional international study looking at users' demographics, usage behaviors, and current attitudes toward social media for educational purposes. The aim of this study was to assess the views, experiences and expectations of nephrologists and health care professionals around the world toward e-learning platforms and tools to be able to better tailor nephrology educational format and content.

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Preferred Social Media by Survey Respondents

Legend:
- None (N=13)
- Spotify (N=61)
- LinkedIn (N=21)
- WhatsApp (N=52)
- WeChat (N=14)
- Twitter/X (N=80)
- Telegram (N=21)
- TikTok (N=21)
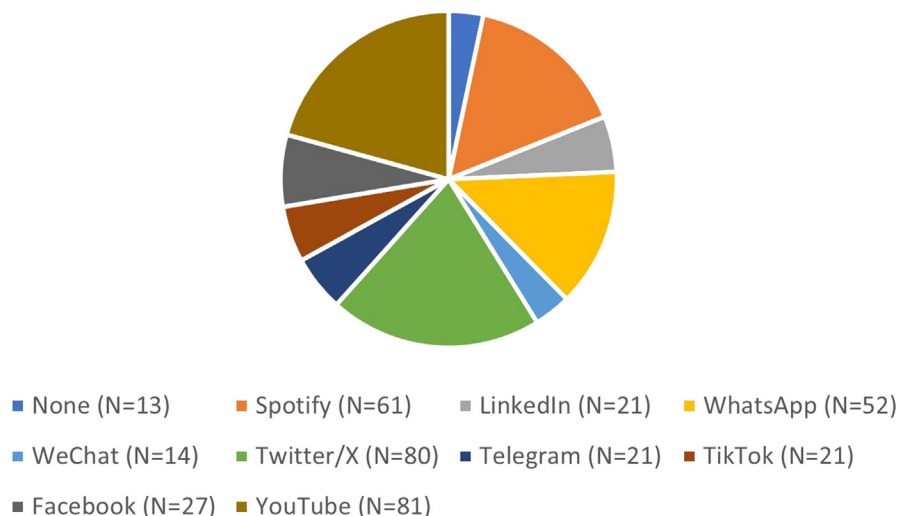- Facebook (N=27)
- YouTube (N=81)

Figure 1. Share of each preferred social media tool.

The ISN social media core team members developed a 17-question online survey (Supplementary Survey) following a literature search on existing literature with the keywords "Social Media," "Nephrology," and "Medical Education" that identified the usual tools used for medical education in nephrology along with the main players.[3-5] The survey was initially trialed with a small cohort of nephrologists and based on the feedback, modified, and distributed subsequently in a widespread approach. Given that the survey was anonymous and we did not intend to collect personal data, ethical approval was not necessary. The survey was distributed to nephrologists, postgraduate trainees, and other allied health care professionals such as nurses, dialysis technicians, nutritionists, and pharmacists. It was sent anonymously between April and October 2022. Team members then sent the link to individual contacts by email and individual messaging. The link was widely distributed on different social media platforms such as Twitter/X, LinkedIn, Facebook, and Telegram. Recipients were requested to send it to 10 or more of their contacts once they completed the survey. This snowballing technique was used to gain momentum for distribution of the survey questionnaire. Following data collection, statistical calculations were performed using R (R Foundation for Statistical Computing, Vienna, Austria) and Figure 1 was created with Microsoft Excel (Seattle, WA), and additional figures were created with R. Categorical variables were presented as percentages.

Results

Responses were received from 392 respondents of whom 75.2% were nephrologists, 7.4% nephrology trainees, and 7.9% nephrology nurses. Most participants (88%) had a medical degree. Low-income countries had a higher percentage of nonmedical degree participants (41.4%) than higher income countries ($P = 0.01$). Overall, 39.33% of the participants were from upper middle-income countries, 25.77% were from high-income countries, 32.68% were from lower middle-income countries, and only 2.77% were from low-income countries. Participants' residencies were distributed as follows: Asia (26.1%), Europe (33%), Africa (19.4%), Americas (19.2%), and Oceania (2.3%). In the Asian and African continents, the income of countries were in the lower-middle range in 30.9% and 31.6% of cases respectively; whereas in Europe, most of the countries were in the high income range (40.4%) ($P < 0.001$). Participants at extreme of ages were a minority with the respondents aged <30 years constituting 4.3% only and those aged >60 years amounting to 5.6% of the respondents. The participants aged 31 to 40 years constituted 45.3%, whereas 32.2% were aged 41 to 50 years (Supplementary Table S1). In addition, most of the respondents aged <40 years were from low-income countries (51%) as compared to lower middle-income and upper middle-income countries ($P < 0.01$). More than two-thirds (69.6%) of the respondents were working in public and private university hospitals. All the social media tools were accessible globally with the majority (90%) of the respondents reporting that they could access them. YouTube was the most
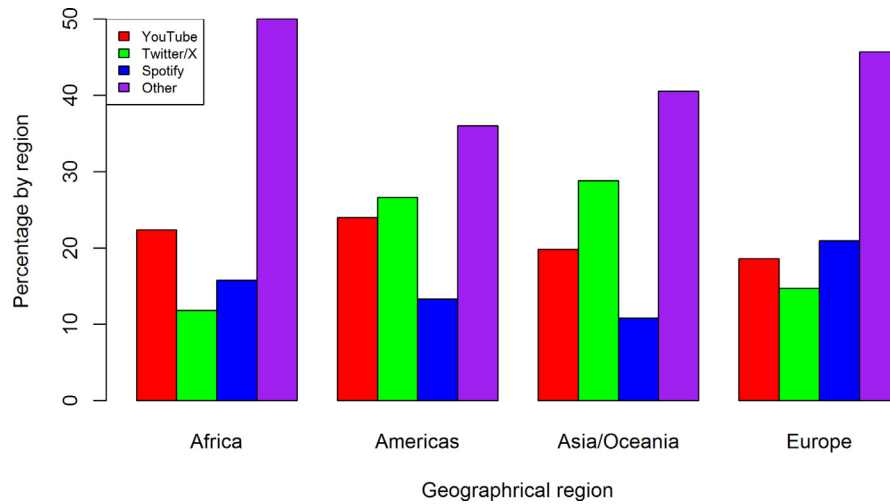
Figure 2. Favorite social media tools across continents (other: Facebook, WhatsApp, Telegram, LinkedIn, TikTok, WeChat).

preferred tool (20.7%), and X (previously known as Twitter, 20.5%), Spotify (15.6%), as well as WhatsApp (13.3%) were used by a sizable percentage (Figure 1). On a regional scale, YouTube was the most preferred tool in Africa whereas Spotify was the most preferred tool in Europe (20.9%), and X was most preferred tool in the Americas (26.7%) and Asia (28.8%) (Figure 2). With regard to countries income levels, both Spotify (17.8%, 17.9%) and You-Tube (17.8%, 23.4%) were the most preferred tools in low-income countries, lower middle-income countries and upper middle-income countries; whereas X was the favorite tool in high-

income countries (31.9%) (P = 0.017). For the participants younger than 40 years old, X was the favorite tool cited most frequently (20.5%); whereas for older participants, it was You-Tube (22.3%). For the partici-pants with a medical degree, WhatsApp (23.9%) and Spotify (21.7%) were the preferred tools, whereas for the participants with nonmedical degree, YouTube (21.4%) and X (22%) were popu-lar (P = 0.034) (Supplementary Table S2). More than half of the respondents used social media to either stay up-to-date (51.7%) or to get access to information related to their profession (59.6%). Smart phones were the

most used devices (95.4%). The most common tool used with the intention to be up-to-date was X (81.2%) (P = 0.005) and was also the preferred tool for networking (80%) (P = 0.043). The most important motivations for all age groups and professions regarding social media usage were networking (66.8%), being up-to-date (66%), and having free access to information (64.7%). The daily use of social media was prevalent and similar in most age groups, with 52.9% of the younger (<30 years) respondents reporting daily use. Conversely, none in the older group (>60 years old) used social media daily and only 31.8% reported using social media
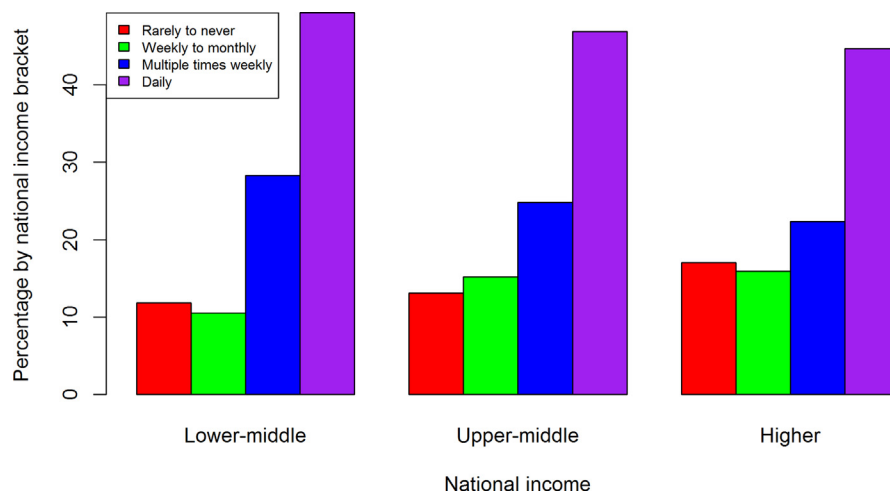

Figure 3. Social media usage frequency according to income of countries.

several times a week. WhatsApp and X were both used daily by 18.2% of users. For online discussion, most participants also used social media more than once a week (57.2%) ($P < 0.001$). The participants who thought that social media use was very useful (63.8%) and had an influence to a certain extent (58.4%) on their profession used and posted more frequently than nonthinkers, and on a daily basis ($P < 0.001$). The participants with the aim of networking (73%) and being up to date (71.9%) were also more avid users and accessed and posted on social media daily when compared with others ($P = 0.013$ and 0.019 respectively). The percentage of participants who found the use of social media tools very useful was the highest in African countries at 15.8% and this percentage was higher than the rest of the world ($P = 0.001$) (Figure 3). Language barriers and internet access affected 8% of users in Europe, Asia, and Africa in non-English-speaking settings. Poor access was found as a barrier in 63.7% of users overall and affected 31.5% of Asian users and 42.1% of African users.

Conclusion

In summary, our study reports that the usage of social media platforms for medical education has become increasingly popular among nephrology health care professionals all over the world with close to 50% of users aged <60 years using them daily to acquire knowledge and remain up-to-date. Online discussions and networking are also important motives to use social media. Users seem to privilege

quick and easy access to information through smartphones with X, Spotify, WhatsApp, and YouTube being the most popular platforms. Language barriers and internet access remain nonetheless crucial factors affecting usage in a significant percentage of users along with lack of trust regarding content. All these parameters need to be taken in consideration for future design of educational content and for networking purposes. Future studies should be designed to measure the effectiveness of social media tools. Our study is among the first to assess social media usage among health care professionals for career development in the discipline of nephrology worldwide and included in addition to physicians, a significant percentage of trainees in nephrology. The usage of social media for professional purposes in previous studies is often for health promotion, provision of medical service and administration, research, medical education or training, and health-related social movements.[6] The strengths of our study is the large number of responses and the diversity of professionals surveyed in terms of age, qualifications, geographic locations, and income settings. Data collected before our study on the usage of social media was mainly from North America (62.5%) and Europe (21.9%) according to the meta-analysis by Hamm *et al.*[7] Some limitations to our study, are the fact that we did not assess for any difference by gender, the career opportunities like personal marketing and research collaborations.

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