#AskRenal: Use of an Automated Social Media Account to Crowdsource Nephrology Queries

Jade Teakell, Alicja Rydzewska-Rosołowska, Swapnil Hiremath, Matthew Sparks, Edgar Lerma, Joel Topf, Nikhil Shah

Submitted to: JMIR Medical Education
on: December 05, 2024

Table of Contents

#AskRenal: Use of an Automated Social Media Account to Crowdsource Nephrology Queries

Jade Teakell[1] MD, PhD; Alicja Rydzewska-Roso?owska[2] MD, PhD; Swapnil Hiremath[3] MD, MPH; Matthew Sparks[4] MD; Edgar Lerma[5] MD; Joel Topf[6] MD; Nikhil Shah[7] MBBS

[1]Division of Renal Diseases and Hypertension McGovern Medical School The University of Texas Health Science Center at Houston Houston US
[2]2nd Department of Nephrology and Hypertension with Dialysis Unit Medical University of Bia?ystok Bialystok PL
[3]Department of Medicine University of Ottawa Ottawa CA
[4]Duke University Durham US
[5]University of Illinois at Chicago Chicago US
[6]Oakland University William Beaumont School of Medicine Rochester US
[7]University of Alberta Faculty of Medicine & Dentistry Edmonton CA

Corresponding Author:
Jade Teakell MD, PhD
Division of Renal Diseases and Hypertension
McGovern Medical School
The University of Texas Health Science Center at Houston
6431 Fannin Street
Houston
US

Abstract

Background
Social media platforms are used in contemporary crowdsourcing, and X/Twitter is apt for reaching a large number of people with a common interest. Users, especially those with small follower counts may find it challenging to reach a large audience. #AskRenal was developed as a social media crowdsourcing tool to help users get answers to nephrology questions. We hypothesized that #AskRenal hashtag could be used by anyone to receive helpful and timely responses to nephrology questions posed on a social media platform.

Study Design
We created the X/Twitter account @AskRenal and an automation software that retweeted any new posts containing the hashtag #AskRenal. Using the Symplur Healthcare Hashtag tool, we extracted and analyzed public X/Twitter content containing "#AskRenal" posted between Dec 2016 to Aug 2020. A group of 15 medical professionals reviewed #AskRenal posts individually and completed a 10-question survey for each one.

Results
During the study period, there were 17,704 tweets containing the hashtag #AskRenal and 3,099 were included in the survey analysis. About 40% (1228/3099) of #AskRenal questions were posed by users with < 1000 followers and 9% (270/3099) were from students and trainees. The questions comprised a wide range of nephrology topics. Over 75% (2386/3099) of #AskRenal questions garnered a response, and of those, answers were prompt with 69% (1644/2386) receiving a reply within 6 hours. The reviewers assessed responses to be helpful in answering the questions 83% (1978/2386) of the time. Inclusion of hyperlinks and images in replies were associated with a rating of a helpful answer ($p < 0.001$). Follower count was not significantly associated with the probability of obtaining a helpful answer.

Conclusion
We demonstrate that a targeted hashtag and dedicated X/Twitter account amplifying the hashtag automatically can be used to garner timely and helpful responses to nephrology questions from a wide range of individuals, irrespective of social media follower count.

(JMIR Preprints 05/12/2024:69704)
DOI: https://doi.org/10.2196/preprints.69704

Preprint Settings

1) Would you like to publish your submitted manuscript as preprint?

✓ **Please make my preprint PDF available to anyone at any time (recommended).**
Please make my preprint PDF available only to logged-in users; I understand that my title and abstract will remain visible to all users.
Only make the preprint title and abstract visible.
No, I do not wish to publish my submitted manuscript as a preprint.

2) If accepted for publication in a JMIR journal, would you like the PDF to be visible to the public?

✓ **Yes, please make my accepted manuscript PDF available to anyone at any time (Recommended).**
Yes, but please make my accepted manuscript PDF available only to logged-in users; I understand that the title and abstract will remain v
Yes, but only make the title and abstract visible (see Important note, above). I understand that if I later pay to participate in <a href="http

Original Manuscript

#AskRenal: Use of an Automated Social Media Account to Crowdsource Nephrology Queries

Authors and Affiliations:

Jade M. Teakell, MD PhD
Division of Renal Diseases and Hypertension, McGovern Medical School, University of Texas Health Science Center, Houston, Texas USA

Alicja Rydzewska-Rosołowska, MD, PhD
2nd Department of Nephrology and Hypertension with Dialysis Unit, Medical University of Białystok, Białystok, Poland, alicja.rydzewska-rosolowska@umb.edu.pl

Swapnil Hiremath, MD
Department of Medicine, University of Ottawa, Ottawa, Canada, shiremath@toh.ca

Matthew A. Sparks, MD
Duke University, Durham, North Carolina, USA, matthew.sparks@duke.edu

Edgar V. Lerma, MD
University of Illinois at Chicago, Chicago, Illinois, USA, nephron0@gmail.com

Joel M. Topf, MD
Oakland University William Beaumont School of Medicine, Rochester, Michigan, USA, joel.topf@gmail.com

Nikhil Shah, MBBS
University of Alberta Faculty of Medicine & Dentistry, Edmonton, Alberta, Canada, nshah1@ualberta.ca

Word Count (excluding abstract, figure/table legends, and references): 2,811
Running Head: #AskRenal, Crowdsourcing Nephrology Queries

Address for Correspondence:
Jade Teakell, MD PhD
6431 Fannin Street
Houston, TX 77030 USA
Tel: 1 (713) 500-6880
Email: jade.m.teakell@uth.tmc.edu

Abstract

Background

Social media platforms are used in contemporary crowdsourcing, and X/Twitter is apt for reaching a large number of people with a common interest. Users, especially those with small follower counts may find it challenging to reach a large audience. #AskRenal was developed as a social media crowdsourcing tool to help users get answers to nephrology questions. We hypothesized that #AskRenal hashtag could be used by anyone to receive helpful and timely responses to nephrology questions posed on a social media platform.

Study Design

We created the X/Twitter account @AskRenal and an automation software that retweeted any new posts containing the hashtag #AskRenal. Using the Symplur Healthcare Hashtag tool, we extracted and analyzed public X/Twitter content containing "#AskRenal" posted between Dec 2016 to Aug 2020. A group of 15 medical professionals reviewed #AskRenal posts individually and completed a 10-question survey for each one.

Results

During the study period, there were 17,704 tweets containing the hashtag #AskRenal and 3,099 were included in the survey analysis. About 40% (1228/3099) of #AskRenal questions were posed by users with < 1000 followers and 9% (270/3099) were from students and trainees. The questions comprised a wide range of nephrology topics. Over 75% (2386/3099) of #AskRenal questions garnered a response, and of those, answers were prompt with 69% (1644/2386) receiving a reply within 6 hours. The reviewers assessed responses to be helpful in answering the questions 83% (1978/2386) of the time. Inclusion of hyperlinks and images in replies were associated with a rating of a helpful answer ($p < 0.001$). Follower count was not significantly associated with the probability of obtaining a helpful answer.

Conclusion

We demonstrate that a targeted hashtag and dedicated X/Twitter account amplifying the hashtag automatically can be used to garner timely and helpful responses to nephrology questions from a wide range of individuals, irrespective of social media follower count.

Keywords

askrenal, crowdsourcing, medical education, nephrology education, social media, twitter

Introduction

Medical professionals very commonly reach out to their peers for advice about specific patients, medications or procedures. There is a tradition in most medical centers where doctors and other team members meet regularly to discuss cases and often physicians reach out to colleagues in their institution or elsewhere to learn from their experiences. The method of obtaining information - whether seeking the latest advances in medicine or specific advice regarding individual cases - is gradually transforming. In recent years, graduate medical educators and learners have increasingly expanded beyond traditional lectures or textbooks to create and consume open-access, internet-based, digital resources.[1,2] Oftentimes, however, it is difficult to identify a readily available colleague, or an electronic resource with accurate information in a timely manner. This problem is compounded by the cost of access to electronic resources or society memberships and also the availability of colleagues with experience to answer these queries.

Free open-access medical education (FOAMed) is an online movement that aims to provide medical education for everyone, everywhere and at any time. FOAMed uses various online platforms to provide these resources. While the growth of FOAMed mirrors that of social media in general and is relatively new, the ideology might be traced back to Hippocratic Oath, which states, “to teach them this art – if they desire to learn it – without fee and covenant.”[3] Use of social media is nearly universal and increasingly physicians and medical learners are adopting FOAMed because it’s free, faster than traditional learning materials, suits a variety of learning preferences, brings expert knowledge to places where it’s lacking, and builds community.

Emergency medicine physicians were early pioneers of FOAMed[4] but nephrologists have quickly adopted the idea.[5] Nephrology FOAMed is widespread; prominent examples include NephJC (an twice monthly online journal club where interesting articles, guidelines, and perspectives in nephrology are discussed by an engaged community, often with authors of the articles participating),[6-8] NephMadness (a free online, CME-granting, evidenced-based, noncommercial learning initiative teaching the latest nephrology breakthroughs in a March Madness-style tournament),[9-11] Renal Fellow Network (a blog and forum for nephrology fellows to nephrology-related research and challenging clinical topics in an easily digestible format),[12,13] and many others.[14] Medical professionals can have high user engagement on social media, and these platforms can facilitate collective intelligence - academic posts, idea and resource sharing, and professional opinions - across large geographical distances.[15]

Asking questions and finding answers, is one of the most powerful learning and teaching tools in medicine. Crowdsourcing is the practice of obtaining information or inputs into a task or project by enlisting the services of a large number of people, either paid or unpaid, typically via the internet. While FOAMed is hugely successful and popular among the medical professionals, its educational/informational products have been mostly static with limited interactions. Among the many social media platforms that can facilitate crowdsourcing queries, X/Twitter is a apt platform. X/Twitter is a micro-blogging platform which allows users to ask or comment via short text messages (up to 280 characters) with the ability to tag other users' handles and to attach images, polls, and links. Posts are free and can be viewed by all irrespective of whether a user follows the specific user tweeting. It allows users to direct a complex question to a potentially very large audience.

Answering questions via crowdsourcing on X/Twitter has been used by other medical specialties with success[16,17] but an organized, automated, and thus sustainable method has not yet been described. One of the key problems with crowdsourcing is the difficulty in getting the question directed to a user who is likely to answer the query. Posts by a user on a social media website typically populate the timeline of those users who follow the original poster. In the event that the original poster does not have many followers or is not followed by people with expertise in the area of the query, there is a very strong chance that the query will go unnoticed and hence unanswered.

To overcome this seemingly important barrier, the authors created the #AskRenal hashtag. A hashtag is a word or combined phrase preceded by the # symbol; this links posts to specific and searchable topics. The #AskRenal project was conceptualized in 2016 as a social media crowdsourcing tool to help medical students initially to help answer their nephrology-related queries.[18] Any question posted on X/Twitter accompanied by the hashtag #AskRenal was retweeted by user @AskRenal to a larger target audience - X/Twitter users who follow the @AskRenal or @NephJC Twitter accounts (primarily NephJC, nephrology journal club participants). Thus, the amplified questions were directed at a large group of practicing nephrologists and basic scientists. We hypothesized that use of the #AskRenal hashtag, in combination with social media automation, any X/Twitter user irrespective of their own follower counts, could successfully receive helpful and timely responses to nephrology questions.

Methods

The #AskRenal hashtag was created in December 2016 and the authors publicized its existence by proposing its use on X/Twitter and blog posts. Simultaneously, a new X/Twitter account

was created, “@AskRenal,” to amplify any post containing the #AskRenal hashtag. The @AskRenal account was automated using freely available software (https://digitalinspiration.com/product/twitter-bots) to retweet the query to its followers and additionally, the automated retweet attached the @nephjc Twitter handle to each retweet. These actions resulted in wider dissemination of any #AskRenal-containing post, irrespective of the follower count of the original poster, to all followers of the @AskRenal and @NephJC accounts. These two accounts on X/Twitter are followed mostly by nephrology professionals and are well-established.

The Symplur Healthcare Hashtag Project is an online tool that can extract and analyze public X/Twitter content; it can single out posts containing specific healthcare-related hashtags. Using this software, we extracted all public X/Twitter content containing the hashtag #AskRenal posted during a 45-month timeframe from December 2016 to August 2020. Information on these individual #AskRenal posts included username and bio, complete post text, time stamp, and uniform resource locator (URL). Posts were excluded if they were duplicates, retweets, or if the post content was not an original question.

Posts that contained an original question and displayed the hashtag #AskRenal in either the original tweet or as a quote tweet (QT) were pooled for further analysis. A Redcap survey was created to standardize the analysis. A group of nephrology professionals (the majority being practicing nephrologists and nephrology fellows, see acknowledgement section for full list) reviewed each individual #AskRenal post and then completed a ten-question survey on each one. These surveys were completed from May through August of 2021. This group reviewed the posts’ content, the post author’s current X/Twitter profile, and the response(s) content. X/Twitter profiles display information that the owners choose to display publicly, including name, degree or level of education, occupation, employer, and/or location. This detailed review enabled the characterization of posts based on the author’s level of training, question topic, time to response, presence of media or hyperlinks, and helpfulness of answers. The complete survey instrument with questions and response choices is available in the supplemental material. The reviewers also rated the answers to every #AskRenal query as being helpful or not.

The primary outcome was a helpful response to the tweet containing a query with the hashtag. Other outcomes studied included time to a helpful response and factors associated with getting a helpful response. Data are presented as numbers and percentages by analyzed categories. We categorized follower count of the account asking the question into three (< 100, 101 to 1000 and > 1001) for analysis. We used characteristics of question posers, questions (e.g. inclusion of hashtag or poll in question) and answers (e.g. provision of an image or hyperlink in answer) to determine its

association with a ‘helpful’ rating. All analysis was done with Microsoft Excel (version 10.0. Microsoft Inc., Redmond WA) and JMP (version 8.0.1, SAS Inc., Cary NC). This study (ID Pro00105376) was approved by the research ethics committee of the University of Alberta, Edmonton, Canada.

Results

From December 2016 to August 2020, there were a total of 17,704 X/Twitter posts that contained the hashtag #AskRenal. There was an average of 380 #AskRenal posts per month. The peak number per month was 740 in September 2018 (Figure 1). The @AskRenal bot appropriately amplified #AskRenal-containing posts. From the 17,704 posts that contained #AskRenal, 14,050 duplicates and retweets were excluded from the analysis. Furthermore, 555 posts that did not contain an original question were excluded. Often, users replying to an original question would also include the hashtag with his/her answer. After all inclusion and exclusion criteria were applied there were 3,099 posts remaining for further analysis (Figure 2).

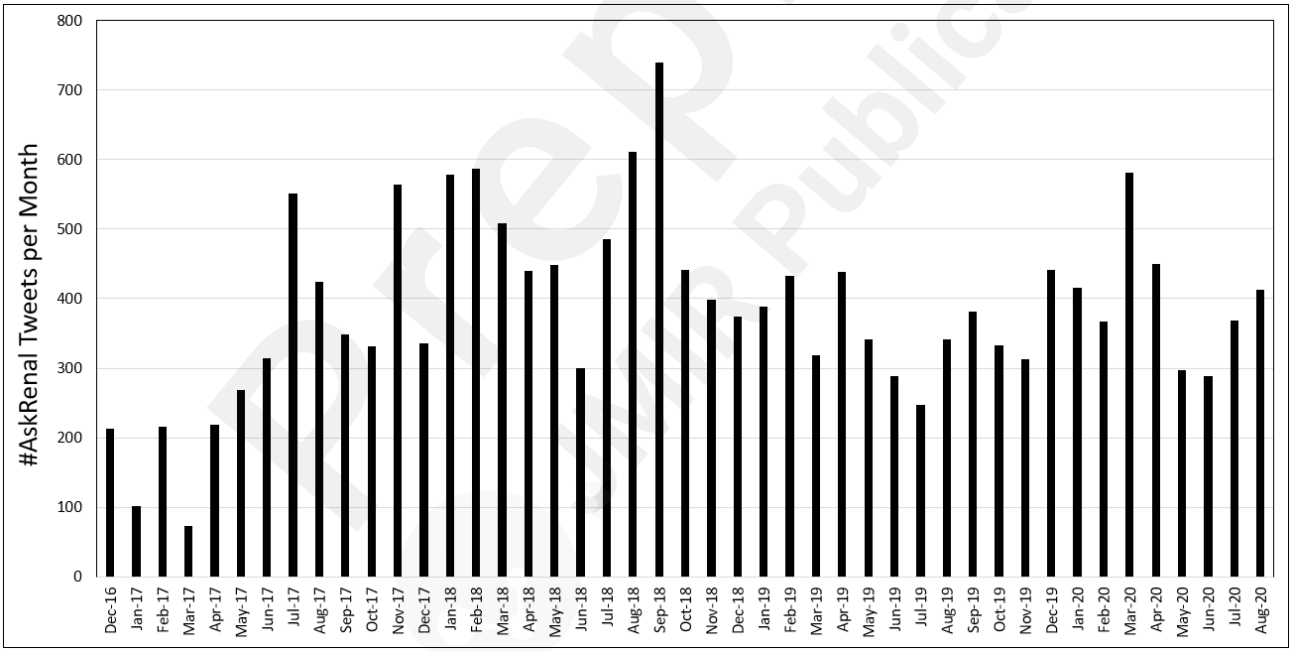


Figure 1 #AskRenal hashtag activity on X/Twitter over the 45-month study period

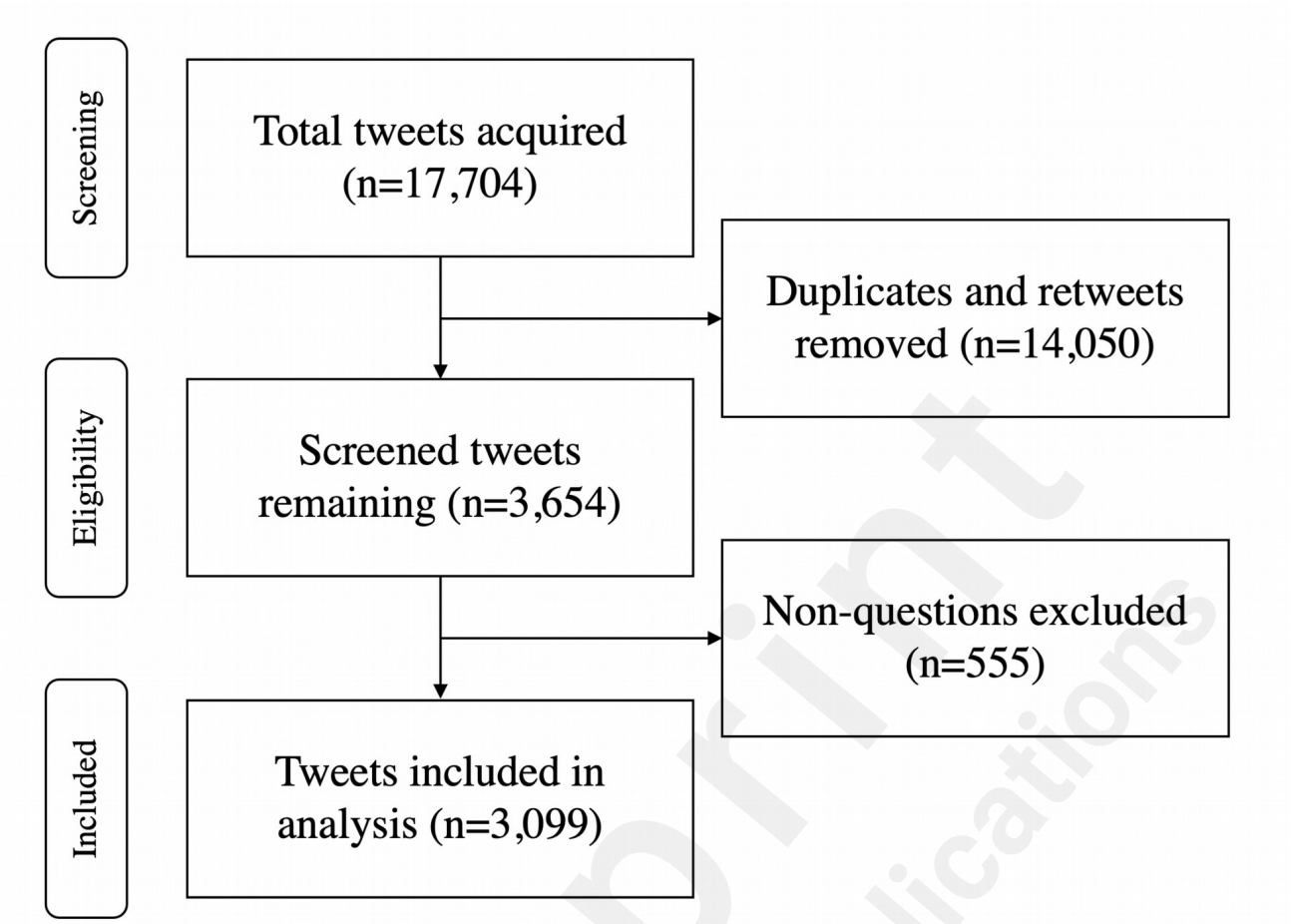


Figure 2 Flow diagram for #AskRenal Tweet/post identification and screening

The characteristics of included and analyzed #AskRenal questions are listed in Table 1; these data were compiled from the Redcap survey responses. Most #AskRenal questions were posted by attending physicians (73%), the majority of whom (91%) were nephrologists. Notably, 270 queries of these were from trainees (219 from nephrology and non-nephrology subspecialty fellows, and 51 from medical students and residents) and a few questions (8, 0.3%) were even from patients. The follower count varied for the person asking the question, with 188 queries (6.1%) coming from accounts with very few followers (< 100). Many questions were concerning medications (23.6%), dialysis (17.8%), and clinical cases (16.7%), but the questions were spread across a wide range of topics. Examples of posts that fell into the category of “Other” were questions concerning COVID-19 (104/3099, 3.3%), acute kidney injury (80/3099, 2.5%), nutrition, pregnancy, and dialysis access. The #AskRenal posts contained a question in text-only format only 42% (1295/3099) of the time, whereas 58% (1804/3099) of the posts also contained additional hashtags, or other media. The #AskRenal hashtag was also commonly used to amplify an opinion poll (‘Twitter poll’ n = 444, 14.3%) which is often used to gauge opinions about diagnostic and therapeutic choices.

Table 1 Characteristics of original posts of #AskRenal Questions

Characteristic	Count (%)
Original Tweet	2494 (80.5%)
Quote Tweet	605 (19.5%)
Who asked the question?	
Attending (Consultant) - Nephrology	2272 (73%)
Attending (Consultant) - Non-Nephrology	209 (6.7%)
Fellow - Adult Nephrology	184 (5.9%)
Fellow - Pediatric Nephrology	19 (0.6%)
Fellow - Non-Nephrology	16 (0.5%)
Resident - Internal Medicine	28 (0.9%)
Resident - Pediatrics	1 (0.0%)
Resident - Other	7 (0.2%)
Medical Student or Intern	15 (0.5%)
Patient / Caregiver	8 (0.3%)
Institution / Group	54 (1.7%)
Industry / Commercial	10 (0.3%)
Other	52 (1.7%)
Unknown	223 (7.2%)
Follower count	
0-100	188 (6.1%)
101-1000	1040 (33.8%)
>1000	1851 (60.1%)
What was the question about?	
Medications	732 (23.6%)
Dialysis	550 (17.8%)
Clinical Case*	517 (16.7%)

Glomerulonephritis	380 (12.3%)
Chronic Kidney Disease	325 (10.5%)
Kidney (and/or Pancreas) Transplant	278 (9.0%)
Electrolytes	256 (8.3%)
Physiology / Anatomy	231 (7.5%)
Education	184 (5.9%)
Hypertension	163 (5.3%)
Pathology	129 (4.2%)
Nephrology Workflows	116 (3.7%)
Acid-Base	71 (2.3%)
Abnormal Specimen	62 (2.0%)
Nephrology Careers	31 (1.0%)
Genetics	25 (0.8%)
Ethics	19 (0.6%)
Other	602 (19.4%)
COVID-19	104 (3.3%)
Acute Kidney Injury	80 (2.5%)
Yes, the question contained other media.	1804 (58%)
Hyperlink to Resource / Reference	244 (7.9%)
Other Usernames	840 (27.1%)
Other Hashtags	754 (24.4%)
Images / Memes / GIFs	196 (6.3%)
Poll	444 (14.3%)

* A Clinical Case formatted post would include a short stem (patient age, sex, symptoms/signs, diagnosis or differential diagnosis) followed by a query. Clinical cases might comprise one or more topics. GIF: Graphics Interchange Format

Out of the 3,099 analyzed questions, 2386 (77.0%) were answered (see Table 2). Further analysis of these answered questions revealed that answers came quickly with 1644 (69%) of posted questions receiving a reply within 6 hours, and 2106 (88.3%) within 24 hours. Most answers (1634,

69%) were accompanied with additional media, commonly hyperlinks, followed by other usernames, images, and hashtags.

Table 2 Characteristics of #AskRenal Responses

Parameter	Count (%)
Yes, the question was answered.	**2386/3099 (77%)**
Timeframe for answer	
0-6 hours	1644/2386 (69%)
6-12 hours	271/2386 (11.4%)
12-24 hours	191/2386 (8%)
>24 hours	226/2386 (9.5%)
Unknown*	52/2386 (2.2%)
Did the answer contain other media?	
Yes	1643/2386 (69%)
Hyperlink to Resource / Reference	1263/1643 (77%)
Other Usernames	776/1643 (47.5%)
Other Hashtags	482/1643 (29.5%)
Images / Memes / GIFs	567/1643 (35%)
Poll	23/1643 (1.4%)
Unknown*	9/1643 (0.6%)
Was the answer helpful?	
Yes	1978/2386 (83%)
No	120/2386 (5%)
Can’t Say	267/2386 (11%)
Unknown*	17/2386 (1%)

*The reviewer completing the survey likely determined that the specific question was not answerable from the extracted information available at the time (e.g. broken hyperlinks, subsequently removed posts, user accounts made private, deleted user accounts, etc.) and therefore did not make a selection from the available survey answer choices. GIF: Graphics Interchange Format

From the 2386 questions that did have a response, the reviewers rated the responses to be “helpful in answering the original questions for 1978 queries (83%). Inclusion of hyperlinks and images in the reply were associated with a rating of a helpful answer ($p < 0.001$). Follower count was not significantly associated with the probability of obtaining a helpful answer, with a helpful answer being obtained even for those with low follower counts (e.g. 76.3% for those with follower count < 100 compared with just over 83% for those with higher follower counts, $p = 0.11$) (Table 3).

Table 3 Associations with helpful #AskRenal answers

Variable	**Helpful N (%)**	**P value**
Follower count		
0-100	103/135 (76.3%)	0.11*
101-1000	646/776 (83.4%)	
>1000	1228/1472 (83.6%)	
Yes, the question contained other media (N=916)		
Hyperlink to Resource / Reference	145/175 (82.9%)	0.98
Other Usernames	603/701(86.0%)	0.008
Other Hashtags	124/154 (80.5%)	0.001
Images / Memes / GIFs	124 (80.5%)	0.39
Poll	349 (84.9%)	0.26
Yes, the answer contained other media (N=1643)		
Hyperlink to Resource / Reference	1178/1263 (93.3%)	<0.001
Other Usernames	706/776 (91.0%)	<0.001
Other Hashtags	444/482 (92.1%)	<0.001
Images / Memes / GIFs	524/567 (92.4%)	<0.001

Poll	20/23 (87.0%)	0.59

*Compares whether the proportion of helpful answers were different across different strata for this variable. GIF: Graphics Interchange Format

Discussion

Social media is readily accessible and online crowdsourcing can facilitate personalized learning. However, the online community at large can be inconsistent, unfocused, and at times misleading which could raise concerns about the source and quality of information received.[19] The American Society of Nephrology (ASN) Communities website (https://community.asn-online.org/home) is a useful example of an attempt to avoid the misgivings of the open internet.[20] There, members of ASN can post questions and receive answers from a forum of nephrologists, open to members only. While useful to many nephrology professionals, it is inaccessible to most students and trainees, patients, and non-nephrology professionals.

We have demonstrated that a targeted hashtag and an automated X/Twitter account can be used by a wide range of individuals to garner timely and helpful answers to nephrology questions. We contend that this targeted crowdsourcing garnering multiple responses serves to prevent the propagation of misinformation. Our aim was to remove the barrier of reaching a large audience and lessen the challenge of reaching a targeted audience. The lack of association between follower count and obtaining helpful answers demonstrates that the hashtag allows amplification of the query to the wider nephrology community on X/Twitter. This is the first study that aimed to systematically characterize nephrology crowdsourcing using the X/Twitter platform and a dedicated hashtag with automated distribution.

A recent analysis of crowdsourcing by Urologists on Twitter (23 original posts with 253 combined replies) showed that questions received responses 96% (22/23) of the time, but there was no determination made on the usefulness of these answers. Furthermore, they found likelihood of success (defined solely as receiving any type of response) was dependent on the author's overall social media engagement score.[17] In our approach, higher follower count was not significantly associated with the probability of obtaining a helpful answer. Given the amplification by @AskRenal automation, the level of training (as a proxy for level experience) nor the follower count affected the rate of response.

The idea of creating a unique hashtag as means to index topics is not new. Recently, Stevens *et al*, analyzed the Twitter activity of conference-specific hashtags (from European Renal

Association–European Dialysis Transplantation Association congresses 2016-2020, #ERAEDTA[year]) to compare tweet characteristics pre- and post-creation of a social media team in 2017 and pre- and post-covid-19-related transition to virtual meeting. They found increasing participation by women and higher proportion of countries represented, and fewer media- and reference-containing tweets in 2019 compared to 2016.[21] Similarly, rheumatology researchers have analyzed the use of the hashtag #Covid4Rheum between March 2020 and June 2020. The posts (n=2483) were qualitatively assessed to determine the type of content posted and according to authors the study highlighted the wide use of social media in rheumatology.[22] These are all examples of retrospective approaches, where the hashtag can be searched or followed. Additionally, hashtags can be used to create a network around large topics. For example, #CardioTwitter is known among cardiologists, cardiology fellows-in-training and other learners. It's a community where live-Tweets from medical meetings are posted, real-time discussions take place, questions are asked, collaborations formed and much more.[23] The #AskRenal hashtag concept is more refined - by using it one does necessarily have to search through previously posted X/Twitter content - it is prospective in its intent. It is one possible solution to the content overload present on X/Twitter (where 500 million tweets per day are posted).[24] Our study not only focused on the type of content posted on X/Twitter but on the helpfulness and quickness of crowdsourcing through this social media platform.

The process of data collection from publicly available X/Twitter content resulted in a few inherent limitations. Assessment of follower counts were made in mid-2021, while analyzed posts originated as far back as 2016, so the survey was unable to capture the follower count at the exact time of the posting. In general, X/Twitter profile follower counts stay the same or grow slowly over time.[25] As such, an account with < 1000 followers in 2021 is extremely unlikely to have had > 1000 followers at any time prior to 2021. Similarly, the assessment of an individual users' level of education was made in mid-2021. It is plausible that a post from a fourth-year medical student in Dec 2016, could have their profile marked as an attending nephrologist in Aug 2021 during the review period. Alternatively, internal medicine attending physicians sometimes chose to return to fellowship training after years in practice. Unfortunately, users' ages, graduation dates, and/or "years in practice" are not commonly included in social media bios to provide a frame of reference.

In summary, we have demonstrated that a target hashtag and a dedicated X/Twitter account that retweets the hashtag automatically can be used to garner timely and helpful responses to nephrology questions by any Twitter user irrespective of follower count or sphere of influence. We are currently working to bring this tool to other social media platforms such as Bluesky and Threads.

Acknowledgements

The authors would like to acknowledge the medical professionals that dedicated their time and attention to this project. Thank you to Sai Achi, Denisse Arellano, Tanima Arora, Eric Au, Gates Colbert, Mohamed Elrggal, Hector Madrigal, Bolanle Omotoso, Brian Rifkin, Yoshinosuke Shimamura, Omar Taco, Tiffany Truong, Verner Venegas, Dilushi Wijayaratne, Jamie Willows, and Anju Yadav for completion of surveys. The authors would also like to acknowledge the Nephrology Social Media Collective (www.nsmc.blog/about) that brings together minds from around the world to cultivate projects in social media as tools for FOAMed. A portion of the preliminary data from this project was presented as an oral abstract (TH-OR47) at the American Society of Nephrology Kidney Week 2022 in Orlando, FL.

Funding

None.

Conflict of Interest Statement

The authors have no relevant conflicts of interest. Dr. Rydzewska-Rosołowska serves as a speaker for AstraZeneca, Boehringer Ingelheim, Takeda. Dr. Lerma serves as a speaker and as a member of advisory boards for Calliditas, Novartis, Otsuka, Sci Pharmaceuticals, Travere, and Vifor. Drs. Topf, Hiremath, and Sparks serve on the board of NephJC as President, Vice-President, and Treasurer respectively (NephJC is a 503c organization that supports social media in medical education and has multiple supporters; Drs. Topf, Hiremath, and Sparks receive no remuneration for these positions). Dr Nikhil Shah serves as speaker for Baxter and Amgen and has received research funding from Amgen. The remaining authors have no other relevant disclosures.

Multimedia Appendix

1. Supplementary Material (including survey instrument)
2. PowerPoint, oral abstract presentation from American Society of Nephrology Kidney Week 2022

Abbreviations

FOAMed, free open-access medical education; CME, continuing medical education; URL, uniform resource locator; QT, quote tweet; ERAEDTA, European Renal Association–European Dialysis Transplantation Association; GIF, graphics interchange format

List of Figures/Table Legends

Table 1: Characteristics of original posts of #AskRenal Questions

References

1. Sterling M, Leung P, Wright D, Bishop TF. The Use of Social Media in Graduate Medical Education: A Systematic Review. *Acad Med*. Jul 2017;92(7):1043-1056. doi:10.1097/ACM.0000000000001617
2. Ely JW, Levy BT, Hartz A. What clinical information resources are available in family physicians' offices? *J Fam Pract*. Feb 1999;48(2):135-9.
3. Oath of Hippocrates, from Hippocratic Writings. Accessed 2/16/2022, https://history.nih.gov/display/history/Hippocratic
4. Cadogan M, Thoma B, Chan TM, Lin M. Free Open Access Meducation (FOAM): the rise of emergency medicine and critical care blogs and podcasts (2002-2013). *Emerg Med J*. Oct 2014;31(e1):e76-7. doi:10.1136/emermed-2013-203502
5. Chan TM, Stehman C, Gottlieb M, Thoma B. A Short History of Free Open Access Medical Education. The Past, Present, and Future. *ATS Sch*. Jun 3 2020;1(2):87-100. doi:10.34197/ats-scholar.2020-0014PS
6. Topf JM, Sparks MA, Phelan PJ, et al. The Evolution of the Journal Club: From Osler to Twitter. *Am J Kidney Dis*. Jun 2017;69(6):827-836. doi:10.1053/j.ajkd.2016.12.012
7. Stoneman S, Hiremath S. Twitter-Based Journal Clubs: Bringing Critical Appraisal to the Social Table. *Semin Nephrol*. May 2020;40(3):264-272. doi:10.1016/j.semnephrol.2020.04.004
8. NephJC: The Why, When and How. Accessed 2/16/2022, https://www.nephjc.com/contact
9. Sparks MA, Lerma EV, Kupin W, Phelan PJ, Jhaveri KD, Topf J. NephMadness 2015: nephrology as a cornerstone of medicine. *Am J Kidney Dis*. Mar 2015;65(3):375-7. doi:10.1053/j.ajkd.2014.12.002
10. Sparks MA, Topf JM. NephMadness After 5 Years: A Recap and Game Plan for the Future. *Am J Kidney Dis*. Mar 2018;71(3):299-301. doi:10.1053/j.ajkd.2017.12.001
11. NephMadness. Accessed 4/27/2022, https://ajkdblog.org/category/nephmadness
12. About Renal Fellow Network. Accessed 4/27/2022, https://www.renalfellow.org/about/
13. Farouk S, Sparks MA. Renal Fellow Network: Past and Future. *Clin J Am Soc Nephrol*. Dec 7 2018;13(12):1915-1917. doi:10.2215/CJN.06700518
14. Colbert GB, Topf J, Jhaveri KD, et al. The Social Media Revolution in Nephrology Education.

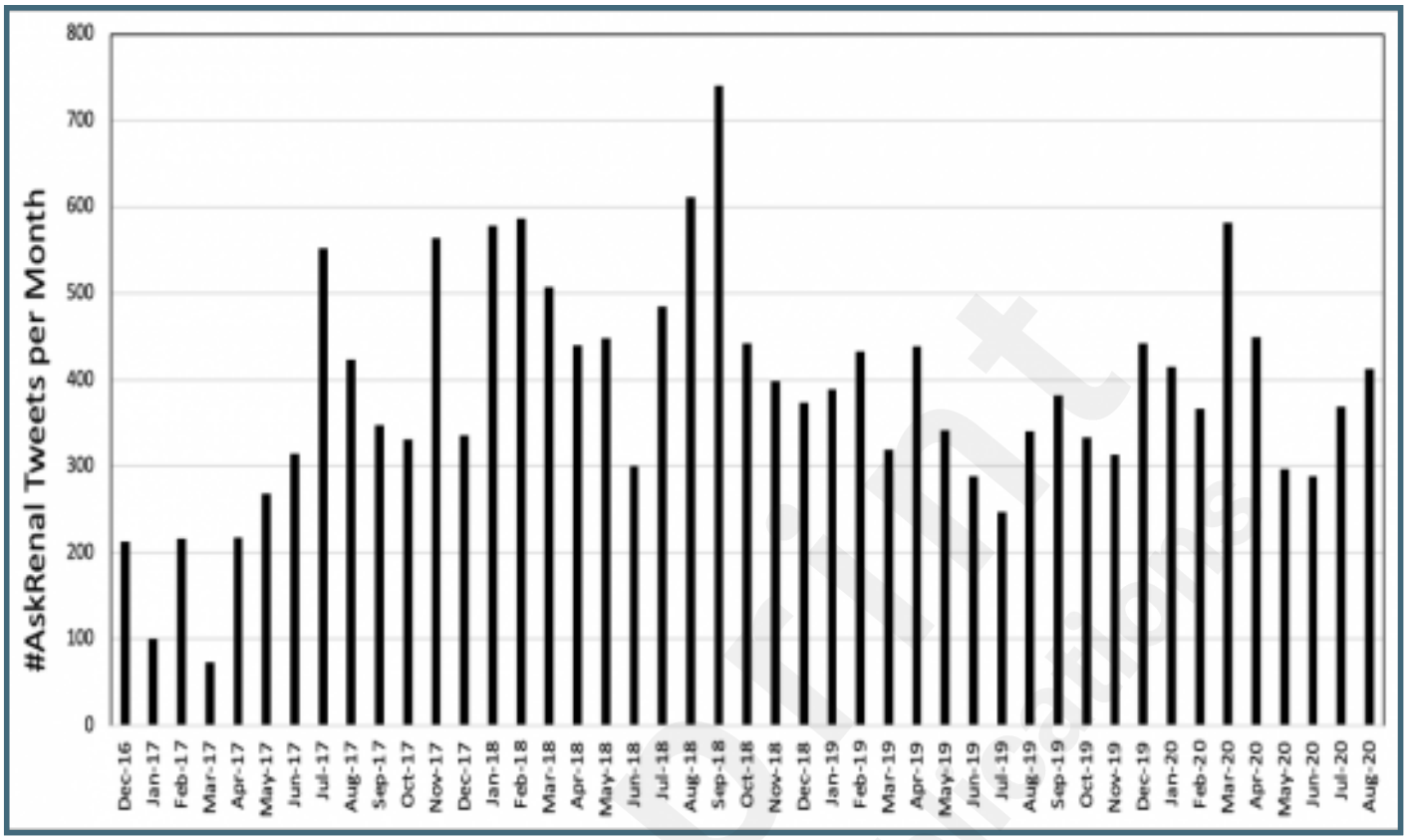
Kidney Int Rep. May 2018;3(3):519-529. doi:10.1016/j.ekir.2018.02.003

15. Xun H, He W, Chen J, Sylvester S, Lerman SF, Caffrey J. Characterization and Comparison of the Utilization of Facebook Groups Between Public Medical Professionals and Technical Communities to Facilitate Idea Sharing and Crowdsourcing During the COVID-19 Pandemic: Cross-sectional Observational Study. *JMIR Form Res*. Apr 30 2021;5(4):e22983. doi:10.2196/22983
16. Cutrell JB. #WhyID: Crowdsourcing the Top Reasons to Choose Infectious Diseases in the Age of Twitter. *Open Forum Infect Dis*. Oct 2019;6(10):ofz403. doi:10.1093/ofid/ofz403
17. Koo K, Shee K, Gormley EA. Following the crowd: patterns of crowdsourcing on Twitter among urologists. *World J Urol*. Mar 2019;37(3):567-572. doi:10.1007/s00345-018-2405-5
18. Topf J. What does a medical student do when they have a renal question? Introducing #AskRenal. 2016. http://pbfluids.com/2016/12/what-does-a-medical-student-do-when-they-have-a-renal-question-introducing-askrenal/
19. AA FMAAA. An adaptive e-learning framework: crowdsourcing approach. Association for Computing Machinery; 2015:
20. Z GRRRC. Creating a Stronger Nephrology Community: Two years of ASN Communities. *Kidney News*. 2018;10(3):15.
21. Stevens KI, Melilli E, Diniz H, et al. Tweet me: conferencing in the era of COVID-19 and 280 characters. *Clin Kidney J*. Oct 2021;14(10):2142-2150. doi:10.1093/ckj/sfab075
22. Ruffer N, Knitza J, Krusche M. #Covid4Rheum: an analytical twitter study in the time of the COVID-19 pandemic. *Rheumatol Int*. Dec 2020;40(12):2031-2037. doi:10.1007/s00296-020-04710-5
23. Masri A, Remme CA, Jneid H. #Cardiotwitter: The Global Cardiology Fellowship. *J Am Heart Assoc*. Jul 20 2021;10(14):e020719. doi:10.1161/JAHA.120.020719
24. Choo EK, Ranney ML, Chan TM, et al. Twitter as a tool for communication and knowledge exchange in academic medicine: A guide for skeptics and novices. *Med Teach*. May 2015;37(5):411-6. doi:10.3109/0142159X.2014.993371
25. X/Twitter Growth Rate Benchmark. Accessed 6/14/2022, https://www.socialstatus.io/insights/social-media-benchmarks/twitter-growth-rate-benchmark/

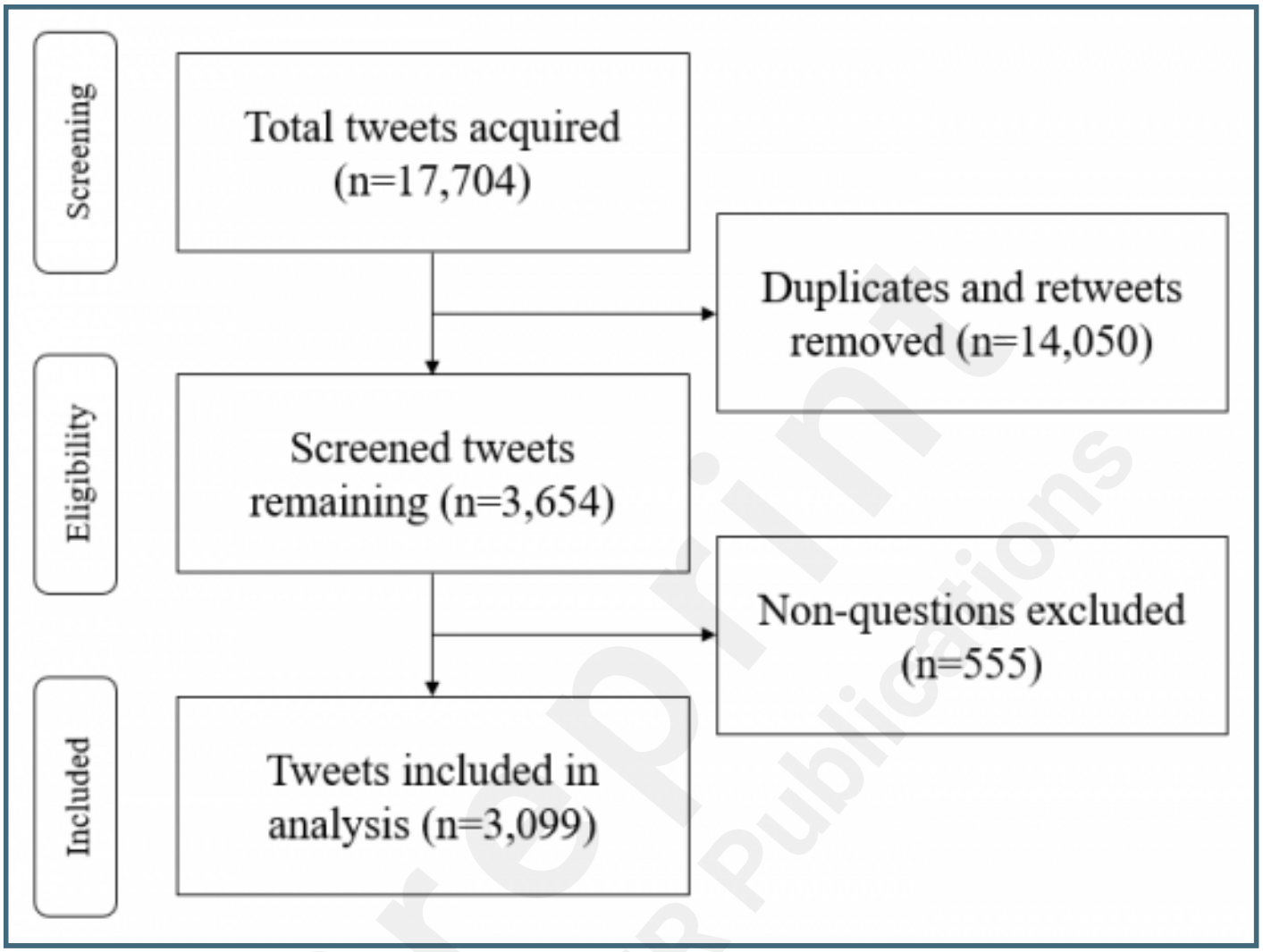
Supplementary Files

Figures

#AskRenal hashtag activity on X/Twitter over the 45-month study period.



Flow diagram for #AskRenal Tweet/post identification and screening.



Multimedia Appendixes

Supplementary Material (including survey instrument).
URL: http://asset.jmir.pub/assets/e0f11d4122514983e63479517e3ca147.pdf

PowerPoint, oral abstract presentation from American Society of Nephrology Kidney Week 2022.
URL: http://asset.jmir.pub/assets/94f5e872bdcf552124686fce909ae9a0.pdf