**KTDRR and Campbell Collaboration Research Evidence Training:**

**Management/Analysis Tools for Reviews - Rayyan**

*Presenter: Martin Morris*

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JOANN STARKS: Hello and welcome to today's webcast brought to you by the Center on Knowledge Translation for Disability & Rehabilitation Research or KTDRR at American Institutes for Research, in coordination with the Campbell Collaboration. The Center on KTDRR is funded by the National Institute on Disability, Independent Living, and Rehabilitation Research, known as NIDILRR in the US Department of Health and Human Services, Administration for Community Living. The Campbell Collaboration is an international organization that promotes positive change through the production and use of systematic reviews and other evidence synthesis for evidence‑based policy and practice. The Center on KTDRR partners with Campbell's Disability Coordinating Group to help increase the number of Campbell systematic reviews in the disability field.

I am Joann Starks with the Austin office of American Institute for Research, or AIR, and I will be the moderator today. I want to thank my colleagues, Shoshana Rabinovsky and Ariana Hammersmith who are helping with the logistics. The KTDRR Center and Campbell Collaboration are working together to offer a 5‑part training course that focuses on high‑quality methods for synthesis of evidence, including the procedures and methods for conducting systematic reviews as well as software, tools and strategies for analyzing and reporting data.

Today we will learn about several software tools for managing and analyzing data in systematic reviews. In the third and final part in today’s session, Martin Morris will introduce Rayyan. Mr. Morris is an associate library at McGill University in Montreal. His current principal research interest is the improvement of library services to traditionally underserved communities, particularly LGBTQ communities with a strong focus on health sciences librarianship. He has also published a knowledge synthesis and a spread of innovations in library information settings.

MARTIN MORRIS: Good afternoon, everybody. And thank you for the invitation to talk about Rayyan. I will mention straight from the outset I have no formal relationship with Rayyan. I have been invited to discuss it because we use it at McGill. I will this afternoon give you a run‑through the platform and how it works and talk about some of the main functionality. I believe that should take about 20 minutes, maybe a little less but about 20 minutes. Then I believe its questions at the end.

So, I am just going to move on. I believe at this stage, Joann, if you could share my screen, let me just log on. Rayyan is somewhat like the first tool we heard about, which is like Abstrackr: Open source, web‑based. The Rayyan platform is maintained by the Qatar Research Initiative. It is free. Not open source in the sense that the source code is not made available but is free to access to anybody. Without any payment whatsoever.

It is particularly good for recording screening decisions, does that pretty well. Other functionalities tends to be limited. So, it is very much on the completely free to access, no charge whatsoever end of the platform. With very good functionality for recording screening decisions and for recording conflicting decisions and so on. It is not so good in terms of pdf management and doesn't offer functionality for extraction and so on.

We have found it is popular at McGill because it is relatively easy to use. It does screening decisions well and part of the attraction is that it is completely free so often it is for postgraduate research projects and so on. If I go to the initial home screen, and I will show you how to set up an account . . . this is the initial screen which is rayyan.qccri.org, directs you to a welcome screen. In addition to the web‑based platform there is an option for the offline IOS screening tool which I will talk about a little more later on. I will just mention that does exist. And to create a new account it is simply a case of pressing sign up and filling in these basic options. This used to need to be approved manually by a staff member at QCRI but now the account is created immediately. I won't go into the typing in details; that is fairly obvious.

But once that account has been set up, you then log in like this and you are presented at the point of login with a screen that looks like this I will point out some of the features on this screen. So, my reviews are reviews that I have created myself. There are four categories of collaborator or four roles on the Rayyan platform which is the review owner. So, I am the review owner and the person who created the test for example and November 19 workshop. If another person becomes a reviewer and invites me, I become a collaborator.

I am a collaborator on this review on knowledge of vascular access. I was invited to provide information on the screening process. There is also the role of translator. If you have a Rayyan screening project that involves abstracts in other languages there is a role to allow somebody to come into the review to translate abstracts. Existing review. I haven't used it myself and am not aware of others using it. It seems an interesting feature to add to the system. Others are public reviews that people can play with to get used to the screening process without affecting their own review at all.

At this stage I am going to create a new review; and the way that we recommend people do that generally is through an EndNote library. It is possible to import various data such a Pub Med, Scopist, Google Scholar files and so on.

We find personally the best way to work with this is have a DG library, EndNotes and export those results into Rayyan. I am going to create a review, first of all, which is done by New Review. The description is optional but could be useful. At this point I press Create. And you can then see these are the different types of files that Rayyan will accept and I have previously created end notes export. This is a typical EndNote library when we teach workshops here at McGill University. Basically, select your references and export in text format as EndNote or more. I won't do that but that is the process. That then creates an export file like this and that is what it looks like.

That can then be imported into the Rayyan platform. The way we do that is to select a file. There is a file. It's a very small export; it will not take long.

And then I press Continue. It takes a few seconds at which points here are the references. The left‑hand side may need refreshing and here we are. And at this point we then have our complete set of references which we are going to go ahead and screen. The left‑hand side provides general information about Rayyan library, including limited duplication matching.

We recommend doing as much as you can to DG duplicate in EndNotes first because this functionality is not perfect yet. But if I click on here, you can see this is what it thinks the duplicates are. I won't go further on that. We don't intend to use it very much.

This section here is for inclusion and exclusion decisions. As the review progresses and decisions are made, I will see at this stage my own screening decisions but I will not see the screening decisions of anybody else. I will talk about how that is unmarked shortly. Rayyan tries to recommend certain terms from analysis of the abstract that I think might be helpful in making screen decisions. It creates a cloud of topics, advises on what pdf's you currently have uploaded. There are none currently there.

Then it gives information about journals, authors and so on. You may or may not find that useful. At this stage, we can then basically go ahead and start screening. I will not see as I say anybody else's screening decisions but I can go ahead and look at my own screening decisions. The functionality shows I can do that. If I wish to include this reference, for example I can either press the button I or click the Include button which will have exactly the same effect. If I wish to exclude the reference after all, then I either press Exclude button or the letter E; and you can see that my name has appeared for this reference either in green, if I were to include the reference, or red if I were to exclude the reference. If I decide I want to delete my decisions instead and maybe rethink that, I can make it Undecided, clicking the U button. At that point, my name appears there but no decision has been made. I can go down and see machine‑predicted further screening decisions as I go along.

Clearly, I would want to be able to give information about why I have excluded if I choose to do so. This section here: Reason allows me to nominate or provide a reason for excluding my record. So, I decide it is the wrong drug and use some pre‑defined exclusion reasons or provide my own reason such as, for example, data cannot be extracted.

And note, as a relatively new feature, if I provide that reason, the reason will be made available in this drop‑ down box to every other person working on the review. So, the exclusion reasons are common and we recommend to research teams here at McGill University they perhaps agree on the wording they are going to use, first of all. The first person who provides that exclusion reason uses the correct wording and it is made available to everybody else. In the same way, we also could label articles which you could refer to as inclusion decision or use the functionality in different ways.

We, for example, have decided on occasion that the data, the body of references may in fact be better screened as two separate bodies or that one subset could be screened later on because it's covering the different part of the literature and that led occasionally to two different reviews where one set is labeled with an inclusion label or some kind of tab at the time. The different key options on the left‑hand side of the screen can be used to filter records I should be clear. For example, I can show only the records that have been excluded. Excuse me for a second. The records that are going to be Excluded by pressing the Exclude button. And there I can see that I am showing only records excluded by me; and I can unclick to remove that or show the Undecided records.

These are ‑‑ it's possible to combine these. So, if, for example, I wish to see only Undecided records that have the word "prevalence" in them, I can select both and these are those records. I can combine these different options. If I wish to see only articles in the Lancet, that is also possible or articles by a certain author, the same way. Those are "AND'd", combining different decisions together. I created a review at this stage. I am very much lonely because I am the only person currently involved in this review. At this time, I would want to invite other people to help most screen my articles. To do that I go back to All Reviews which is here and we come to a screen that you will be familiar with. And I choose the review that I am currently working on.

This functionality shows just me at the moment and shows what progress I have made in screening my articles. This is a small pie chart because there are a small number of articles. I can at this point invite other people to collaborate with me. I previously invited my alter ego on a separate email address, which I shall now do.

I should point out at the time I invite somebody I will decide what role to assign them. Remember I talked about collaborators, translators and viewers. I will decide the role they have. Sometimes if there is a principal investigator who will not screen but observe the review, see what progress is being made, I can invite them as a Viewer. That is something we sometimes do.

If the person I invite does not have a Rayyan account, they will get an email inviting them to create an account at which point they are automatically added to the review. At this point I can now see ‑‑ me with my McGill ‑‑ this is the summary of everybody of which this is the screening that I have done, and this is screening that the invitee, me and my other email account, has done.

You can decide for yourself whether it is a good thing for you to see the proportion of other people's screen decisions. Personally, I would like not to see this. I wish the information were not quite so clear because I think this could bias screening decisions; but this is the information that is given.

The next thing that happens, once a person is invited, we then have the option of whether blinding should be on or whether it should be off. And this button Blind being on appeared the first time I invited first collaborator. Blinding being on means I currently can't see what screening decisions were made by new other person involved in the review. So, that is completely invisible.

We might go back and show ‑‑ you can see that I cannot yet see any other information about other reviewers. I am not going to switch back to blinding in this review. But I will show you another example instead. While we are waiting for that, I will jump ahead slightly and talk about other aspects of article screening. I mentioned this by the way is a guide which provides a fairly comprehensive introduction to Rayyan, which is on the McGill website the URL for it will be provided in the next slide shortly. This provides quite a lot of information on getting started on basic information about the Rayyan platform.

One thing I want to demonstrate here, to show you, is this here which is an example screen from the mobile app for IOS, Apple phones for Rayyan. This is really rather handy because it allows the collaborator, researcher to download all of the references, make offline screening decisions, simply by clicking on Include or Exclude. We describe it in workshops as Tinder for journal articles in Rayyan.

At the same time, it is possible to label in the same way I described before or to give reasons for exclusion for journal articles. This means that this allows for office science and off line screening to be done within room and the next time the device is connected to the internet in anyway the screening decisions are automatically reuploaded into the system.

So, I was showing you before the blinding. And if I show this previous workshop and this is a fuller example of a large number of different screeners, their pie charts are going to load up. Here you can see that blinding has been turned off. That functionality is available only to the owner of the review, the person who originally set it up and roles cannot be changed so it is not possible to assign ownership to another person. Here, with blinding being off, if I go into this review ‑‑ I am hoping that will be possible. what we will see is a listing of the articles for the particular review and you can see here that it is clear who has accepted the article, who has rejected the article and reasons given for doing so. And with blinding turned off, conflict appears as a selectable option on the left‑hand side. And this shows only those articles for which there was not agreement about whether the article should be included or not. This then allows for discussions to take place about how the article should be included, whether the article should be included or not. The other thing that happens when collaborators are invited is that we get this rather useful review chat on the right‑hand side. I am the only person online at the moment. This allows for a conversation to happen among the people online this is quite a nice way of having conferring’s with people if they are work income different places who want to for example discuss which articles should be included and skewed in the list where previously there was conflict. This appears as I say only when collaborators are invited.

That can be minimized like that. I am going to go back to the review that I was working with for this is particular workshop. I want to talk a little bit about pdf management because this links into the recommended workflow that we suggest at McGill for switching from the title abstract stage of the screen to the full text stage of the screen. I am going to select an article and upload a pdf to show how it works. Here we have a pdf for uploads option which I select and add pdf files. It was a random pdf here.

I have a choice at this stage of whether I am going to upload the pdf as private which only makes it available to other collaborator s in my review or whether I wish to make it available to the entire world. Clearly there are copyrighting issues in doing that. We don't formally recommend that people do. But I am going to upload it as private; and you will see, once I have done this that is the functionality is quite limited. Here we have the pdf now listed within that abstract but there is not really much I can do with it. Other people can see it. So, in a way it is a possibility for sharing literature. I can't annotate it anyway.

If I click it, it just shows the pdf in a separate screen in that way. There is nothing clever I can do with it. For this reason, the general workflow that we recommend to people because we don't have the ability to go to full text screen in the way that Covidence has. We recommend, once the initial round of screening has been done, that the Included/Undecided articles are then exported then reimported into a new Rayyan review and also imported at the same time into a collaborative EndNote library because it is better for text and you can add annotations. So, at the second stage we do recommend that workflow.

I am nearly ready to conclude, so I will mention some other limitations as well. The interface is currently available only in English. There isn't functionality of the data extraction. So, it really does just do the screening decision management decisions, but it does not go much further. Unfortunately, it is not possible to edit citation. If I wanted to add notes here for example or spot something I want to change that, unfortunately will not be possible.

So, once I have the results in the review, they are there, they are static and cannot be changed. So, Joann, I am going to stop sharing. There we go. Thank you. Thank you for that. So that is more or less all I have to say regarding the brief tour of the Rayyan platform.

Joann, if you could sort of advance my slides to show the address. One slide back. We do provide lib guide function for Rayyan. Unfortunately, in most cases we do get ‑‑ not unfortunately ‑‑ we get quite a lot of requests, several a day from researchers around the world who landed on our lib guide using Rayyan who have questions. Unfortunately, because of time issues, it is hard for us in most cases to respond except to say unfortunately we cannot help.

You are welcome to contact me. Depending on the simplicity I will try to answer questions. But I can't help with particular problems you have in your reviews. I do invite you to consult our lib guide if that is helpful to you. Okay. That is all I think I have to say for the moment.

JOANN STARKS: Thank you so much, Martin. That was a really nice demo of all of the features of Rayyan. We did have one question. I think you probably have covered it. The questioner is wondering if there was an offline way to use Rayyan and I know you also mentioned the mobile version.

MARTIN MORRIS: The offline way would be to use either the iPad or iPhone option. Rayyan itself is a web application so you would have to be online to access the website. So, I think the iOS application would be the best way of working off line if you wanted to screen while not being connected to the internet.

JOANN STARKS: I want to thank our presenters for taking time to prepare and to introduce these software tools to help manage and analyze data for systematic reviews. We hope you will take a few minutes to give us some feedback about the webcast by filling out a brief evaluation—the link is listed in the slides. You only need to respond once, after you have viewed all 4 videos. I also want to thank the AIR staff and representatives from the Campbell Collaboration who helped with planning and logistics, and of course, we want to thank NIDILRR for their support to offer these webcasts and other events.