REALTIME FILE

CCHP-The Classic Tale of the Haves and the Have-Nots
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>> Aria Javidan: Hello, my name is Aria Javidan and I'm with the National Consortium of Telehealth Resource Centers. Today's session is on The Classic Tale of the Haves and the Have-Nots: Disparities in Telehealth Availability in Rural Hospitals. Today's webinar is being sponsored by the South Central Telehealth Resource Center. They are presented on the third Thursday of each month.

Just to provide some background on the consortium, there are 12 Resource Centers. Each serves as focal points for the effective use in telehealth services in rural and underserved communities. Your audio has been muted for today's webinar. Please use the Q&A platform to ask questions. Please note that closed captioning is available for today's webinar and located at the bottom of the screen. With that, I will pass it over to Hari Eswaran, Director of the South Central Telehealth Resource Center.

>> Hari Eswaran: Thank you, Aria. It is a pleasure for us at CTRC to have speaker Dr. Karim. She is an Associate Professor in the Department of Health and administration and college of health professionals and Virginia Commonwealth University. She teaches health care, financial management to graduate students. Her research interests are rural hospital financial performance, geographic disparity, Medicaid expansion, hospital quality and access. And Dr. Karim is part of the telehealth center, and she is at the Virginia Commonwealth University and this is one of the projects she had worked on and has a far-reaching implication for all of us, so I welcome Dr. Karim to give us her insights for her talk today.

>> Dr. Karim: Great, thank you, Hari. Before we get started, I want to share my screen. So, just checking, can everyone see my slides? All right. Okay, so thank you all and for such a kind introduction Hari. It is a pleasure to be invited to share this research with you all. The title of my presentation is The Classic Tale of the Haves and the Have-Nots: Disparities in Telehealth Availability in Rural Hospitals.

So, today's research presentation is part of a funded project by the federal office of rural health policy and the U.S. health resources and service administration. The purpose of the grant is to associate the rural health care in hospitals. The presentation that I will show you today will hopefully kind of came up midway as we were preparing our analysis and data for this overall objective.

So, my name is Saleema Karim. I am the project lead for this research proposal and very excited to share our research with you. I want to take this opportunity as well to acknowledge the hard work and effort of the telehealth center team at the University of Arkansas for Medical Sciences.

So, the title of my presentation is The Classic Tale of the Haves and the Have-Nots: Disparities in Telehealth Availability in Rural Hospitals. Again, thank you all for taking time out of your day for attending this presentation. I hope this presentation and research topic will be informative and generate some thoughtful discussion and future ideas on this or other potential topics.

This team, the rural telehealth evaluation center team has submitted a paper based on the results I will be sharing with you. So, this slide presents an agenda for this research presentation. I will start off with defining the haves and the have-nots, present briefly background content on rural hospitals and the benefits of telehealth, briefly discuss the study motivation, the research hypothesis and our objective, and include the research method, the results and conclusion from the analysis and end with our next steps.

So, since the title of this presentation is The Classic Tale of the Haves and the Have-Nots, I thought why not I start off the presentation with defining these terms. According to the Merriam Webster is the have are people who have a lot of money, possessions, wealthy people, and the have-nots are people who have little money and few possessions, otherwise, the poor people.

So, the have and have-not theme is not new, but we could say it is as old as time. Say, if you were to think back, you may have a favorite book or story that has its basis on the have and have-nots. There have been a number of classic books and stories that have focused on the have and have-nots, there have also been movies focusing on the have and have-nots. There is a TV show that has the have and have nots. We have an interest in the variation that exists between the have and the have-notes, it allows us to identify the variations in the populations that we are studying.

In terms of providing background to you all, I am sure much of this information is familiar to you and frequently cited in the literature. What I'm going to tell you isn't new, reiterating or summarizing what we possibly already know. Rural hospitals make up greater than 50% of all hospitals in the U.S. They provide essential access to in-patient, outpatient and emergency medical services.

>> Aria Javidan: I'm sorry, Dr. Karim, I think your audio has been muted.

>> Dr. Karim: Medicare and Medicaid reimbursement. In an attempt to mitigate these challenges that I just mentioned in the previous slide, some rural hospitals have adopted telehealth, which provides remote deliver and ensures continued access to rural resident, so the benefits of telehealth have been cited in the research and include increased patient volume, increase quality of care, reduce costs by reducing readmission, increase patient access to specialty care, improve patient outcomes and lastly, it has been theorized that telehealth increases patient revenue and decrease costs.

So, the initial person of our study was to determine the association of telehealth technology and financial performance on rural hospitals, so this study is the study that has been initially funded by federal office of rural hospitals and HRSA. We look at rural hospitals and try to determine does it help the rural hospitals to become financially sustainable or another source of sustainable income for rural hospitals.

In order to carry out our initial objective, which was to look at rural hospitals and the back of telehealth on financial performance, we had to separate our hospitals, our rural hospitals into three distinct, different categories. The categories are the treatment group, or this would be

rural hospitals that did not have telehealth, and then adopted telehealth, and continued to use it through our time period for our study, the control group, which includes hospitals that never adopted telehealth. We refer to these hospitals as the have-nots. And the last group, the always group, the group that always had telehealth. On this slide, I captured what that looked like. The first group is the treatment group, they don't have telehealth then they turn the switch, and they have telehealth, then the hospitals that never have telehealth and then the hospitals who never have telehealth.

So, the proposed objective again focuses specifically on treatment and control group hospitals that's what our initial funded research is going to be focusing on a what we're continuing to look at right now. This is, hopefully on your screen shaded in blue. It is the first two hospitals we will be comparing. But the presentation today is actually going to focus on the bottom two, which should be lightly shaded in red. And this research analysis is going to actually compare the rural have-nots, those who never had telehealth during our time period with those who have telehealth, the ones I refer to as the haves. We will compare the those shaded in the red or light pink.

So, our hypothesis for this study is telehealth adoption in rural hospitals may be related to the financial health of the hospital, and maybe related and impacted by hospital and community characteristics. And the objective of our study is to investigate the relationship between financial characteristics, hospital and community parks and telehealth adoption in rural hospitals.

The study or the data that we used for this study was obtained from four data sources. We used data from the hospital cost report, which provides the financial data, the American Hospital Association Annual Survey, which provides data on hospital characteristics, the AHA annual hospital I.T. supplement, and the area health resource file, which provides data on county level characteristic used to describe where the hospital is physically located. This data was merged using a hospital identifier. So, just some initial details about the study sample.

So, our sample included rule hospitals from 2009 to 2019, which is 11 years of data. Rural hospitals were defined as short term, general acute, nonfederal facilities with special payment designations, as well as hospitals with no special payment designation located in a nonmetropolitan county or in a subcounty area with rural urban community testing area codes of four or greater. If they closed in 2021, they were removed from the treatment group. The treatment group were those who did not have telehealth and adopted telehealth during this period. They were as removed. What was removing were two groups of hospitals, the hospitals that always had telehealth turned on from 2009 to 2019, or those who never had telehealth, so we're comparing the haves and the have-nots. Also, those with financial report of less than a year were also removed from the data set.

So, our sample contain rural hospitals. We have the always, the haves, and the have-nots over 2009 to 2019 time period. They had their telehealth during the whole time period versus those who never had them. So, we're comparing the control group, or I commonly refer to them as the haves, and the have-nots. We decided to evaluate the financial performance of rural

hospitals, the haves and the have-nots by using two margins of profitability. Operating margin is measure of hospital profitability from patient services. Total margin is measure of overall hospital profitability from operating and non-operating sources. Negative numbers indicate there is a loss of profit or their expenses are higher than their revenue or in other word, they are losing money.

We also wanted to include variables that represent hospital characteristics and community characteristics, so hospital characteristics included structural factors, Medicare and Medicaid, the size. The community characteristic includes percent of Medicare and Medicaid patients, the hospital size, using the number of beds. The community characteristics is at the county level and include the percent seniors, the poverty rate of that county, the unemployment rate, the per capita income, the population density and hospital concentration, which is a measure of the number of hospitals in a county, so if you are in a county with seven other hospitals or if you're the lone hospital that is in a county.

So, here are some preliminary results that I would like to present to you. So, this first slide presents the unadjusted, average operating margin for the rural have and have-not hospitals. The operating margin is the profit the hospital makes from the core operations. There were 325 have hospitals and the unadjusted average is 1.5%, if you transfer for every dollar of revenue, the hospital is making 1.5 cents profit. There are 275 have-not hospitals, and the average unadjusted average operating margin is 7.73% over the 11-year time period.

Sorry, did something happen?

>> Aria Javidan: No, you're all good.

>> Dr. Karim: I wasn't sure. Things seemed to have cut out. Also from this slide, we can notice there are 325 have hospitals and 275 have-not hospitals and the average unadjusted operating margin is negative 7.73% over 11 years, so that translates to about for every dollar of revenue the hospital is losing close to 8 cents for every dollar they are bringing in. So, just looking at this slide, if we observe the haves that have adopted telehealth compared to the have-nots, we can see the haves are more profitable compared to the have-nots, and those hospitals that do not have telehealth.

So, this next slide presents the unadjusted average total margin for rural hospitals, and they have the have and have-not hospitals. Remember again, the total margin is profitability both for operating and nonoperating sources. The unadjusted average total margin is 4.14% for the hospitals that -- the have hospitals. And the unadjusted margin for the have-not hospitals are 1.35%. This slide kind of gives us the same results of the previous one where hospitals that have telehealth are showing to be more profitable than hospitals that do not have telehealth.

So, this next slide that I'm showing you is a slide that presents a table where we compare hospital characteristics and community characteristics of hospital have and have-not hospitals. The differences that stand out, specifically on this slide are the have hospitals, the ones with telehealth are larger in size. They have more beds. They are a large percentage of them are

not for profit and they have lower in-patient days than the have-nots and these are specifically significant.

Now, let's look at the community characteristics between the have and have-not hospitals. We found here there are also some significant differences. The have rural hospitals have lower unemployment rate, lower percentage of individuals less than 65 years without health insurance, higher per capita income, low poverty rate and higher number of hospitals in the county compared to the have-not hospitals.

So, we also ran two different regression models in our analysis and the first regression is the model where we evaluated the county characteristics on the probability of becoming a have rural hospital and the results from the regression model indicate when we compare not for profit hospitals and both government and for-profit hospitals there is a decrease likelihood, if we compare for profit hospitals and government and not for profit hospitals and government and for profit hospitals, there is a likelihood of being a have hospital, a hospital with telehealth. Increasing Medicare patients decreases the likelihood of being a have hospital. Increasing percent of less than 65 without health insurance decreases the likelihood of being a have hospital and located in counties where you have one other hospital in your county increase your likelihood of being a have hospital.

So, this last slide actually shows, or this results that I'm showing you right now shows you the ordinary regression results. We did this with using robust standard errors, models of showing adoption on control hospitals and characteristics. So, the key findings that we found here, comparing the haves versus the have-nots. Rural have-not hospitals have an average of 6.92% points higher operating margins than have-nots. The profit margin for government hospitals have a 4.48 percentage point. So, the results show that there is a negative relationship between the percentage of seniors with operating margins and total margin.

So, from this analysis that I have shown you, what are our conclusions, right? We can see first of all there is variation between the rural haves and the have-not hospitals. What does this mean? There is a disparity in telehealth adoption, and this has implications for access, quality and outcomes for the residents of rural communities. We also recognize in this analysis and the research design that we can't infer causality. We don't know if having telehealth improved financial performance or if hospitals that are more profitable have telehealth. So, whichever came first, we can't determine that from this analysis, but that is what we're hoping to do in the overall objective of our paper to determine does telehealth improve hospital financial profitability?

So, recognizing that both hospitals that have telehealth and do not have telehealth are very distinct in terms of the communities they serve and their specific characteristics. So, this presents an interesting conundrum regarding obtaining a better understanding of what drives rural hospital financial performance and telehealth adoption. What this may mean for the future as we are hopefully, recovering from the pandemic, what this may mean in terms of continuing using telehealth.

So, some of our study limitations that I want to acknowledge, our study years included 2009 to 2019. What we found as we were trying to identify a hospital with and without telehealth, there is a lot of variation using the I.T. survey from the AHA data. Using that information, we created a die cod miss cater. What we found is there are different degrees of having telehealth and our focus was determining there is telehealth versus there isn't telehealth. There is also a lot of variation in terms of whether a hospital consistently reported if they have telehealth or not and missing data. Hospitals report their financial metrics less than 365 days, so if they report it every six months or every three months, those hospitals were removed. There are also a lot of outliers in the financial data and, of course, there is missing data.

So, what we -- this project that has been funded by the federal office of rural health policy and HRSA are year one objective is to determine if rural hospitals and telehealth, does telehealth make an impact on rural hospital financial performance. Our year two study is looking at, you know applying this to urban hospitals and seeing if there are other changes with using telehealth, not only financial performance, does it improve efficiency, does it increase market share? Our year three proposed study was looking at in 2020, how does hospitals that have all of a sudden had to complement telehealth, those were the have-nots during our time period, if they have to complement telehealth -- implement telehealth, how are they working compared to the hospitals that had it over the stead time period.

So, this is the end of my presentation. I apologize for any technical difficulties and hopefully, you were able to follow along. And we can open it up for questions and if you give me 30 seconds, I will close one of my windows and take questions being asked.

>> Hari Eswaran: thank you for Dr. Karim for the nice presentation.

>> Joe Schaffner: We do have one question here asking if there is a publication or public source for your evaluation available out there?

>> Dr. Karim: You mean based on this presentation?

>> Joe Schaffner: Yeah, the findings, what your presentation was based on?

>> Dr. Karim: Where there is a paper being submitted right now to medical care research and review. It was submitted last month, and you know, fingers crossed it get published and we can share our results.

>> Joe Schaffner: Great. Awesome. Everyone else feel free to use the Q&A function to ask any questions. Here is one. What is the study specific to certain time of telehealth or varying like stroke, burns, OB, et cetera?

>> Dr. Karim: So, we don't have that information, I don't know, Hari, if you can add to this, but we just have if a hospital has telehealth and what extent they have implemented it. That level of detail or granularity was not included in the data.

>> Joe Schaffner: Hari, did you have any comment on that?

>> Hari Eswaran: No, I don't think we have that granularity yet.

>> Joe Schaffner: Okay, we have another one here. Can you discuss the hospitals owned by the government a little more?

>> Dr. Karim: I'm not sure -- what they are?

>> Joe Schaffner: Let's see. On the slide where you had it broken down the have and have-nots, you had it broken down by nonprofit, for profit and government. I'm assuming that is the slide they are referring to.

>> Dr. Karim: So, the question coming from is just in terms of its ownership. So, one of the things, hospital financial performance depends on is the type of ownership it is. So, if you are for profit, your goal is to increase shareholder wealth and your decisions you make would be different compared to if you are not for profit. Not for profits can be public not for profit hospitals, for instance, an example would be a children's hospital. You have government hospitals, which are community hospital, state facilities for instance, so the different types of ownership influence the funding that is available, the type of patients that they see, and their financial decision they would make. There are limitations if you are a government or not for profit hospital, the sources of financing, for instance, that you're able to obtain versus a hospital that is a for-profit hospital and where they can obtain additional financing.

>> Joe Schaffner: Yeah, the request followed up with there were considerable differences in terms of telehealth being used and you just answered it there, but also, I think you mentioned it in your limitations, as far as the different identifiers as being a barrier to your study. So, I'm curious, as you're talking, I kept thinking about the date, 2009, to 2019, obviously, after 2019, the landscape changed significantly. What are your thoughts on that? How do you see the results in your study here? Anything, you know, different that you see coming out of this?

>> Dr. Karim: So, one of the things I think we need to be mindful in the results I have shown you is -- this is what I see based on, you know, knowing finance and knowing this material is that wealthier hospitals are able to invest in certain technologies or capital investment compared to those who don't. So, if that's the case, the hospitals that don't have the financial resources are not able to invest, so you know, going forward with the pandemic, it's trying to see, how did these hospitals become sustainable? How do we make sure the rural facilities that can't afford to invest in these types of technology or other types of investment, what can be available to them? Are there special types of loans that can be available to these types of facilities? To help them reduce the disparity, creating more equity, because now you see there is a difference in rural hospitals, those that have and those that don't. The title that I came up with, while you have rural hospitals with the have and have-not, it is really hospitals that have wealth and those who don't have wealth. Those that don't have wealth are at a disadvantage. What do you need to provide them, maybe as policymakers, government, are there low-interest

loans? Is there is a way that they can invest in the technology? Otherwise, they are in a spiraling circle, and they will never be able to with what they are making, the money they generate will be able to invest in these types of technologies.

>> Joe Schaffner: Thank you for that. We have a few more here. From a statistical appointment of view, there might be other reasons that make the margins of the hospital change overtime and the utilization of telehealth is related, but not a causal reason for the margin change. Can you comment on that thought?

>> Dr. Karim: Can you repeat that question? I'm trying to understand -- it seems like it is more of a comment. I agree, this model was, again, there are a lot of things that are not controlling for, but you know if the person can expand more on what the question is.

>> Joe Schaffner: We will leave that out there and see if they can expand a little bit more. We have another one here. Did you lock at state policies or state-level variation in relationships between hospitals that have and the have-nots in telehealth, maybe adding state fixed effect?

>> Dr. Karim: No, I did add hospital-level fix effect, I did not add any state-level fixed effect, so that may be a way to control for the unobservable time variant bias that would be there. I did use fix effects just look at the hospitals overtime.

>> Joe Schaffner: We do have a comment here. I know in Arkansas, the trauma system and stroke program bring in those in our state, I see how it between the have and the have-nots. Thank you for your data.

>> Dr. Karim: It is publicly available, so it is not in its best form. There are a lot of assumptions that are made and stating those limitations in our paper, but we're hoping with the actual objective of the paper to really see if hospitals are being -- if rural hospitals are make money off of telehealth, and if they are, this could be a way for rural hospitals to, you know, that don't have telehealth or how to keep it sustainable. I think that is another question that we will have to determine, once the pandemic, I don't know if it will wrap up, but come back to some sense of normal, if telehealth will be as in demand as it was during the pandemic.

>> Joe Schaffner: We have a question in the chat box here. Was there is a difference in region in the country as to adoption of telehealth during the COVID period?

>> Dr. Karim: So, we are hoping to get data for that. So, we don't have data for the 2020 when COVID happened. Our analysis focuses on 2009 to 2019, just right before COVID happened. So, what would be interesting is to see those who had telehealth during that time period, and they continued having it during COVID versus those who had to quickly put it into place in how they fared. If you have it, there is probably less of a learning curve and you are probably able to adapt more quickly using telehealth and continuing providing care without any disruptions, versus those who didn't and then had to all of a sudden, you know, access the technology, put it into place, learn how it works, so that again, would be an interesting question to review.

>> Joe Schaffner: And then sort of in the same vein for your study and time period of your study, was there is a difference in adoption of telehealth based on the region in the nation?

>> Dr. Karim: We didn't check by that. One of the issues that we had with this data set is, like one of the things I presented is the low number of rural hospitals where we had complete data. So, if we were to break it down by region or state, I think we would have very few to be able to make any conclusion and that's more of a data issue. We've had hospitals within our data set they would fill out the I.T. survey or they wouldn't fill out the I.T. survey. So, finding a complete 11 years of hospital data ended up eliminating hospitals that would fill it out for two years and then not fill out the survey. Again, the AHA survey is a long document. I'm sure whoever fills it out got tired and decided not to fill out the rest of it. That is an important question, but we don't have the data unless it is collected somewhere else.

>> Joe Schaffner: Thank you. Dr. Karim, I don't see any more questions or comments. Thank you for being here. I will turn it over to Aria.

>> Aria Javidan: Just a reminder that our next webinar will be held on Thursday, July 21 hosted by the Pacific basin telehealth Resource Center. More information will be posted on the NCTRC website soon. Lastly, we do ask you that you take a few short minutes to take the survey that will pop up at the end of the seminar. Thank you, Dr. Karim for your presentation. Have a great day, everyone.