

Third Mini grant Presentation

Auditory Evaluation of Stroke Survivors: Validating A Low-Cost Screening Protocol by Dr Adebolajo Adeyemo

Questions and comments

Question: I found this project very interesting. I only have 2 questions. When we talk about low-cost tests for auditory screening I was really fascinated by the App I was just wondering has anybody done any work to compare the app with the ringing test and how does it compare. Secondly, I was interested in the young stroke patients for example in this part of the world the East Africa, part of the cause of stroke in young people like the ones I saw on the extreme left of your graph usually is due to sickle cell anaemia or in many cases also HIV does that also hold for your patient. Thank you.

Response: Thank you very much for this question. Am not aware of any story of compared tests and I think part of the reason is because of the nature of our work. In this particular instance the app is trying to ascertain the presence of hearing loss and the severity it is not trying to determine whether the hearing loss is from foreign bodies within the canal that will cause a person to fail the test. Hearing loss is possibly from noise exposure or use of some drugs. I think may be the reason why there is no study to compare the tests. The other point is the fact that this is something that is designed for the mass as something that can be used to ascertain whether they are hearing well or not. You need to be an expert to know how to conduct the investigation so that it is done properly. The cause of stroke in very young children I don't have that information but it is something that is worthwhile looking into we will go back and confirm the cause of stroke among the young thank you.

Question: Thank you Dr Adeyemo for the insightful findings. I have 2 questions. One is a brief one it is a part that I may have missed from your presentation. What is the percentage generally of people who suffer hearing impairment after stroke and then the second question which is a question that may help our centre. Just looking at the risk factors for stroke and then the whole pathway to stroke and then the subsequent disability and then rehabilitation if you had resources today where do you think we should put the money in that pathway from risk factor control all

the way to rehabilitation otherwise we look forward to publication so that you can be able to share with all our other partners. Thank you.

Response: Thank you very much for the question. There has been reports on literature on prevalence of auditory impairment among stroke survivors. The rate is as high as up to 80% I did mention that earlier. About resources I would like to answer the question from the point of view of auditory impairment in stroke survivors so to get to that I will say that if we have resources we will need to spread it across different areas one is from risk factors all the way down to rehabilitation because as I showed earlier some studies have shown that among people with hearing loss there is higher incidence on stroke so we are going to talk about risk factors for hearing loss we are going to talk about reducing the prevalence of noise exposure we are going to talk to young people who are always having earphones on connected to their smart phones or the tablet and possibly listening to music all day long we are going to be talking to policy makers on how to reduce environmental noise we are going to be looking at our town planning rules and trying to impose them ensuring that busy roads are providing way for residential and not located near schools particularly primary and secondary schools. There will be a lot to look at in terms of resources to look at risk factors and how to reduce hearing loss in the general population. When it comes to stroke survivors the first thing to do is screening for hearing impairment. What can be used is a combination of smart phone along with Amsterdam Inventory Auditory which everyone knows or a health worker who will be involved in management of stroke and easily trained to use in order to screen people who will have hearing loss. In terms of resources, I can say we may need to spread it across thank you.

Question: I want to say thank you to the presenter. Thank you for the insights and thank you for the new knowledge. I have 2 questions. One is, are you measuring the abnormality that comes with processing sound or are you measuring tolerance to sound or the hypersensitivity of the sound channel? I am just a bit confused. I know those 3 things can affect auditory, so which one exactly are you measuring. I was also going to ask about all this our earphone that we keep on using I also saw you having one and are we gradually moving to becoming hearing impaired that's scary but most of us in this meeting sometimes we have some hearing things plugged in.

Are we running a risk. Should we be careful? So those are the 2 questions. Thank you very much.

Response: Let me start with the second question and let me start by trying to exonerate myself. I am using the earphones for the purpose of this presentation because otherwise I will have to rely upon the microphone of my laptop and the presentation might not be as good to those of you who are listening to me so that is the reason. It is well documented in animal and human studies that noise induced hearing loss is irreversible and so you will see that many of these smart phone manufacturers Apple and Samsung at least those high-quality ones they have embedded apps in their phones that warns you when your volume is high that is because of what has been said. In Nigeria we are living in a very noisy environment. There are laws in place to guide the exposure to noise but having them being implemented is a different ball game that is in terms of the environment. In terms of usage a lot of people young people particularly when they are putting on earphones listening to music or things in their smart phones or their devices the people sited next to them often times could hear what they are listening to and so when am talking to medical students or some other set of students whom I teach I warn them if the person sited next to you can hear what you are listening to it means that the volume of your device is too loud. We need to first get this message across. What other thing to keep in mind is the fact that age related hearing loss is a well-known clinical entity and others is the function of the aging process as it were. I would like to wrap up the answer to the second question that way.

To the first question, hearing impairment can be either peripheral or central. Peripheral is at the level of the ears itself, the outer ear the middle ear and the inner ear up to a certain level of the brain stem. The central auditory impairment comes from the area of the brain stem and goes as far as to the higher centres. In all of these places lesions in this higher spectrum would lead to hearing loss. But this study was undefined. What we were looking at was the ability of the participant to be able to take sound that is projected to them. That shows if there is a lesion within the peripheral system or component of the auditory pathway then that is expected to pick it up. That was what we did. In addition to that we used the screening tool to see whether it could give us the same information as the person was going to give us and therefore the questionnaires we were asking the patient about their ability to hear the ability to relate in a quiet

environment about their ability to hear in a noisy environment etc. That was the whole essence. So that was what we were trying to do. Their ability to detect sound. I hope that is helpful.

Question: Just wanted to pick on Dr Mayowa's brain knowing too well that he is an expert in stroke medicine in Africa. Professor Mayowa if you can hear me. Just wanted to know it's a question I had asked earlier to your colleague, but he specified mainly on stroke rehabilitation but in your view looking at a broader picture where do you think we should go if we got resources am sure you have thought about this before. Should we put our resources on controlling the risk factors for stroke maybe the cardiovascular risk factors or looking at the other aspects of managing stroke from events to disability to rehabilitation where do you think in Africa, we should put our resources?

Response: Thank you very much. There is something called stroke quadrant which we proposed that looks at the entire landscape of what needs to be done. What is the best thing, is to prevent stroke. The entire population is actually at risk of developing stroke. The risk factors are so common so we have to do our best to prevent but at the same time we also have to take care of the stroke survivors, but the stroke survivors can also have another stroke if we still don't prevent the recurrence so it's a continuation of care and services and is an integrated push that is required. Thank you very much.

Comment: Thank you for sharing your professional knowledge with us. We are just looking at a bigger picture in the region where if we were to continue with the collaboration and strengthen it the areas that we can look at generally at the region.