Legislation coordination committee.

She is also the Country Director for Nepal, for the Northern Pacific Global Health Research Fellows Training Consortium.

She leads multiple implementation science research projects to prevent non-communicable diseases, including cervical cancer, cardiovascular disease and diabetes.

She and I have been working together for the past six years. She originally came to work with me when I was at Harvard as a part of my NIH Director’s Pioneer Award, and we started to develop some of these research projects that Dr. Shrestha is gonna talk about.

But she’s also gone off in her own directions as well. And we’ve continued to work together, we’re co-PIs, or I’m site PI of multiple grants that she has led the submission of and succeeded in winning.

And it’s a very productive relationship. We’ve had many, many papers published. She’s also an Adjunct Assistant Professor in our Chronic Disease Epidemiology Department here at Yale.

And she’s available for discussions with students.
and other researchers here in the Yale community.

She has lots of data that she can collaborate in the analysis of, and many ideas for other projects that could be conducted in Nepal. So, she’ll be here until Friday and she probably still has a few slots available in her schedule. If you would like to meet with her to discuss any of these things further, you can also get in touch with William Tootle who’s managing her itinerary.

So, I’d like to turn this over to Dr. Shrestha now and I’m really looking forward to her talk. Thanks so much everybody for joining us and for Dr. Shrestha for traveling all the way over here in somewhat in the midst of COVID to meet with us and give this presentation today.

Thank you, Donna, for such a wonderful introduction.

And thank you everyone for those who are present.

in-person in this room and then those who are joining online.

and Zoom, thank you so much for your time and interest.

So, today’s talk is gonna be a little very informal kind of discussion on opportunities and challenges.
of implementation research to prevent and control non-communicable diseases in LMIC.

And I’ll be sharing a lot of my experience from Nepal. And I think that a lot of these challenges, would be also applicable to other parts of the world where the resources are limited to do these kinds of work.

And my talk would be like more about a general introduction of what we are doing in Nepal in collaboration with CMIPS and the second part would be like what were the major opportunities and specific to doing the implementation research in that context.

So, let me give you like a... Let me start with a brief introduction of Nepal. It’s a small country in between India and China, located in Southeast Asia. And compared to US, it’s about 67 times smaller than the US.

There are 11 times fewer people that live in Nepal compared to US. The per capita GDP is only 4.3% of the US per capita GDP. And then Nepal’s life expectancy has been increasing over the past few decades.
and then it’s expected to keep increasing. And with this longevity,
a lot of non-communicable diseases and chronic diseases have crossed our paths.
And if we look at the population pyramid of 2020,
there were lots of bulk of the population were towards the base of the pyramid,
indicating that lots of young population was in the country.
But the prediction for 2025 shows that we will have this population pyramid changed by then
and with a lot of middle aged population growing.
1990. It’s a little hard to read what the x-axis is and the-
Oh, sorry. The chart that-
So this one?
Yeah, this is year.
So what’s the first year?
1990.
So that’s like a remarkable increase in life expectancy
over a very, very short period of time.
I’m wondering if you could say a little bit about has that been researched at all?
Is it known or is there good evidence for why there was this remarkable increase
over such a short period of time where,
what was it? It was like, what was it like in 19?

What did it start at?

Like 55 to 60, so is that what it’s hard to read, but that’s the y-axis.

So in 1990s it was about around around 55 to 60.<v ->

And then by 2019 it’s about like 72 years.

So a lot of it is contributed to improvement in maternal child health,
specifically infant mortality rate.

Actually, Nepal was one of the countries that achieved the million development goal in relation to infant mortality rate.

And the infant mortality rate decreased really rapidly during that time.

And that is considered one of the major contributors to what’s increasing life expectancy.

And what did Nepal do to break down that actual mortality?

A lot of things they were like,<v ->

so Nepal’s health system was just built to address maternal child health and infant mortality and communicable diseases.

So we actually started pretty late in terms of health system.

We started in 1978 after the Alma-Ata conference.
121 00:06:28.350 --> 00:06:33.000 when the primary healthcare was very advo-
cated.
122 00:06:33.000 --> 00:06:36.930 And the Nepal health system was built in '80s,
123 00:06:36.930 --> 00:06:39.982 basically from '84 to '90.
124 00:06:39.982 --> 00:06:44.982 And the government were very progressive
towards that
125 00:06:45.180 --> 00:06:47.550 and we built a health system that reached
each
126 00:06:47.550 --> 00:06:52.290 and every corner of the country, even the most
modest areas.
127 00:06:52.290 --> 00:06:55.380 So all of the villages had at least one
128 00:06:55.380 --> 00:06:56.460 or two health centers
129 00:06:56.460 --> 00:06:58.560 and they had primary healthcare outreach
centers.
130 00:06:58.560 --> 00:07:01.350 So from these health centers people,
131 00:07:01.350 --> 00:07:04.330 they were called village health workers were
assigned
132 00:07:05.340 --> 00:07:08.700 to run these outreach centers every month
they would go
133 00:07:08.700 --> 00:07:11.580 like 5 to 7 times to different parts of the
villages
134 00:07:11.580 --> 00:07:12.930 that were not accessible.
135 00:07:12.930 --> 00:07:15.120 And then they distribute family planning,
136 00:07:15.120 --> 00:07:19.380 they did immunization, child growth monitor-
ing
137 00:07:19.380 --> 00:07:23.490 and antenatal care, postnatal care.
138 00:07:23.490 --> 00:07:27.960 So a lot of health system developed during
that time.
139 00:07:27.960 --> 00:07:31.680 And it also significantly contributed to ma-
ternal
140 00:07:31.680 --> 00:07:36.573 like improvement in maternal child health and
reduced,
141 00:07:38.070 --> 00:07:40.200 that’s from malaria, tuberculosis.
And Nepal is also has the widest network of dots and malarias treatment centers, even in the most remote area, there is availability of testing for TB and then there is availability of the dots. So yeah, I think that was a big leap for a country like Nepal and it is considered one of the successful model. In fact, the kind of network that it has, we have like 48,000 volunteers in each ward, what is the smallest administrative unit? In every ward it has one female community health volunteers who are trained in health. They get like one month of training and then are refresher courses every two years. And these volunteers are connection between the community and health centers. And there were the female married, female of reproductive health who had at least one child with selected for that volunteer work. And each woman have, like each volunteer has a network, a women’s group or mother’s group in their community. So whenever someone becomes mother, they join that group and every month they run health education
or immuno like, and they help with the immunization, they help with vitamin A distribution in children.
So a lot of community mobilization and social mobilization, connection of community to the health center. Each health center has a community-based committee that has like chairperson of that ward and then health volunteers like leaders, teachers, and then they make a joint decisions about the health of that specific community. So it’s very primary healthcare is very community-based and it reached to each and every household and that is the biggest strength of the health system in Nepal. It’s quite rare even in the context of low resource setting. Yeah, and then that has been this network, also has been now being explored to deliver the non-communicable diseases. Is the 2025 demographic transition, is that more of like a target or is it more like? It’s more like forecast? I have another question. It seems like this, what you’ve described depends pretty heavily on volunteers, which from kind of an American point of view,
like it’s hard to imagine that so many people would volunteer and be reliable, and continue without getting paid. And is it really true that these volunteers like are consistently doing this kind of work and they’re not getting paid? Yeah, yeah, it’s since 1980. So the first volunteers were recruited in 1984 and since then they have been working like they are above around 50,000 volunteers all around Nepal. And they get paid really, really minimal. Like the days they work, they get paid about $2.50.

So let’s say if they are, vitamin A distribution is very successful in Nepal, like on all on five children get vitamin eight twice a year and there is a coverage of more than 95%. And these volunteers do that. So the day they are distributing vitamin A, they get $2.50. It’s very minimal even in context of them. And there has been debate whether a government should pay them or not. And then with the like expansion of lot of programs in the health sector, like they are considered one of the biggest liaison between the community
and health center and then like a role models for awareness raising and all that. So anyway, so and then this brings to like how Nepal’s health system was like really created to address maternal child health and to address the non-communicable diseases. And then over the last, from 2009 to 2019, if we look at what has changed, the top 10 cause of death and disability is still neonatal disorder, but it has decreased with about 38% in the past decade. And non-communicable diseases like such as COPD, ischemic heart disease, stroke, cirrhosis, depression, low back pain has increased. So currently, non-communicable diseases are the number one cause of that in Nepal as well. And if we look at the risk factors contributing to these daily, malnutrition is still number one. But if you look at the change, there is 46% reduction since 2009 to 2019. Reduction to air pollution, but increase in tobacco conjunction, high blood pressure, the dietary risk. And if you look at like high body mass index,
like hoping 95% increase from 2009 to 2019. So these all data indicates towards how Nepal is now vulnerable to the non-communicable disease. There is existence of dual burden of disease, like even within a how one household you can find a malnourished child and overweight mother. So that’s kind of nutrition and epidemiological transition that our country is facing.

So today, I’m just focusing on three studies that we are conducting in collaboration with CMIPS School of Public Health in Nepal.

And these are the three very different kinds of study all of them like implementation science study to address non-communicable diseases in some way. So the first of these studies is the, we call it Nepal Pioneer Worksite Intervention Study, that’s when we started, it started when I was in Harvard. Like I remember we, the first conversation was like as early as in 2015 on November. I still remember that because I went to Nepal to explore like what could be done during that time. And then we came up with this idea that we already have a lot of evidences to prove to how to modify the lifestyle
and how the lifestyle modification can contribute to different diseases like diabetes and other CVD risk factors. So we designed this study to prevent the cardio metabolic disorders in work site setting. And then I’ll get in details of each of the study briefly. The previous study was more about hybrid design. We were using the evidence-based intervention, but we spent a lot of time doing formative study, contextualizing that information into Nepal’s context. And this is one of the, I think, one of the biggest areas in implementation science research the context, how do we understand the context and how we apply existing evidences that were proved somewhere else like in the US in Argentina and Thailand. And then bring that evidences and implemented in context of Nepal. So we did a lot of formative study on around that developed intervention and then analyzed its effectiveness. And second study was to evaluate the package.
of essential non-communicable diseases in Nepal. And this is now completely different intervention.

294 00:15:46.380 --> 00:15:50.760 and then WHO recommended and advocated this intervention, WHO

295 00:15:50.760 --> 00:15:54.600 Nepal government adopted in 2016, piloted in two districts

296 00:15:54.600 --> 00:15:57.270 and then without evaluating it,

297 00:15:57.270 --> 00:15:59.220 it expanded into 32 district.

298 00:15:59.220 --> 00:16:02.550 Now the plan is to expand to all 77 district

299 00:16:02.550 --> 00:16:06.780 and they have also started ruling out the training,

300 00:16:06.780 --> 00:16:09.150 but nobody really knows what is really happening

301 00:16:09.150 --> 00:16:10.200 after that training.

302 00:16:10.200 --> 00:16:13.320 And after the 2016, is it really working, not working?

303 00:16:13.320 --> 00:16:15.720 What’s really happening in that specific context?

304 00:16:15.720 --> 00:16:19.830 So we got R21 forward international grant

305 00:16:19.830 --> 00:16:22.740 to study the current implementation outcomes

306 00:16:22.740 --> 00:16:26.640 of the national program in the pilot districts.

307 00:16:26.640 --> 00:16:31.350 And the third is the cervical cancer prevention program

308 00:16:31.350 --> 00:16:32.250 in low resource setting.

309 00:16:32.250 --> 00:16:34.287 It’s also a pilot implementation study

310 00:16:34.287 --> 00:16:37.170 and the implementation is a researcher initiated

311 00:16:37.170 --> 00:16:38.310 into implementation.

312 00:16:38.310 --> 00:16:40.980 So this is like a different touch

313 00:16:40.980 --> 00:16:43.440 in the implementation science area.
So we know that HPV screening works to prevent the cervical cancer, but it has not been done in Nepal. Only 8% of Nepalese women have currently reported to ever had any cancer screening. So there is a huge gap but there has been a lot of, there is a national protocol as well which then advocates for VIA and SPV testing. But government doesn’t really have any specific plan of action to how to roll this out in the country. So we are planning to do a small study among 1500 women and then collect these information for government to roll it out throughout Nepal or throughout a certain parts of the country where it can work. So the first study was more contextualizing, second is like evaluating a national program that has already been implemented in 30 days like investigator initiated intervention and collect information for government to scale up it in further into in like around the country. So William, I cannot look at the time please keep me posted. It’s only 10:25, so you’ve got plenty of time. Okay, thank you.
This is a picture of one of the interventions that we did.

So employees in the work sites also got instruction for physical activity and we used local resources to do that.

Thank you so much.

So this study was started to assess what would be the effectiveness of environmental level intervention alone and individual level intervention in combination with environmental level intervention on its effect on the metabolic risks.

There's a lot of evidences like a randomized control trial, meta-analysis that shows that diet and physical activity does reduce the risk of cardiovascular diseases.

And there has been developed a lot of models to deliver that into community and in like penetrate in the population.

And one of them is diabetes prevention program, which is pretty popular and it has been contextualized in many countries.

So we took that as well.
And behavior change intervention is also more than individual level effort. So if we ask people to like eat whole grain and then the whole grain is not available anywhere in around and nobody can eat here it, right? So we were very convinced that until these healthy foods are available, people will not be able to eat it. So one of our biggest challenges was to make these food available. So that’s how we added the environmental intervention and we were very interested to know like what would be the effect of environmental intervention alone. So we kind of came up with this study design, let me explain like why we choose the work site because employees spent a lot of their waking hours at home before COVID and hopefully, in the coming days. And there is also natural environment for social support within our work site. And we have an access to adult population who are at risk to do the non-communicable diseases. We have this population who are in this formal employment and we can follow them for years to come. In Nepal, it is very rare for the employee to quit job.
and/or to change job if that they are,
most of them are find their job in their hometown closer to family.
So it’s very rare for people to like change or move from town to town in Nepal,
this was a good setting in that context.
And also it has like formal and informal norms that could facilitate the healthy choices
and we could have like a protected time for doing some health education programs if we require.
So work site provided a very good platform for us
to deliver this intervention.
And we opted for the environmental level worksite environment
that included healthy foods in the canteen.
Cafeteria is called canteen in that part of the world.
So healthy food in the canteen and health screenings,
and management support for the lifestyle improvements.
And indeed there was individual level components.
It was based on the diabetes prevention program.
It has like peer lead lifestyle education,
weight-loss and physical activity goals
and 16 core courses, classes,
each class was one hour long.
First 20 minutes was about lecture.
Second 20 minutes was more discussion about how this lifetime modification is going on in their life and then experience sharing. And the third, last minute was physical activity. They would like to come to a place, there was a specific site that was dedicated for the physical activity and a physiotherapist would go and then they do the exercise together for 20 minutes.

And then we conducted the studies in three steps. The first was formative study and then designed the intervention based on the formative study. Like I would more say like adopt the intervention and then test its effectiveness. So we did a lot of things for formative study. We were concerned about the quality of oil, so we brought the oil samples from, there were four canteens in this hospital where we were doing this study and we got oil samples from all four canteens, both used oils as well as unused oil. And there is this practice of reusing the oil. So we were concerned if the reheating or reusing the oil, it might have an impact on the nutrients.
So, but then we found that there was not much difference between the used and unused oil and they were all using, basically using soya bean oil, vegetable oil or sunflower oil. So we decide that we will not do any intervention for the oil part.

And then the second part was, which was a big challenge was, we did a small study among 40 participants and did brown and white rice tasting. So we blinded the people, everybody would get white rice or brown rice in different combination, five combinations. So, and then that were randomly assigned for each day. So 25% white rice, 50%, 75%, 100% white rice or 0% brown rice. And then they would rate after they eat their lunch, they would rate it in terms of how do they like overall, appearance, taste, aroma and texture. So 100% brown rice was not that much liked, and then these people are eating brown rice for the first time, even Nepal has been like, its stapled food is rice. Everybody eats rice two times a day and a huge hip of rice.

And then so we took upon the taste and aroma
that were rated for 50% brown and 50% white rice.  
and 100% white rice were rated similarly.  
And then texture was even it’s 50/50 was better,  
rated better than 100% brown rice.  
So we started to introduce the brown rice  
by mixing 50% brown rice, 50% white rice in the cafeteria.  
And we also conducted the focus group discussions  
with the cafeteria clients.  
And this paper has been published  
and then one of the big major facilitators  
was the availability of healthy foods in the cafeteria.  
And major barrier was human resources  
and lack of knowledge in the canteen,  
chef and a person working in the cafeteria,  
and then difficulty in changing the food habits.  
Like it’s food is culture, it’s not just a thing  
that you eat, it’s like it’s more into your social structure  
and culture so those were identified  
and from the canteen operator’s point of view,  
we found that making profit was not a priority  
in that context.  
So that was a good facilitator for us.  
And they also had a physical facility and commitment,  
and the barrier was again the lack of human resources  
in the canteen, they were not aware about healthy food
and how to modify their existing recipe to convert the food into healthy options. And then lastly, we also analyzed the seals of the cafeteria in the past year. And then we wanted to focus on those foods that were being sold in maximum volume. So we selected like...

We categorized foods into different categories based on how much were they sold. And then we focused on those that were sold like more than 10,000 items in that year. And based on these information, we had actually four stakeholders meetings with the cafeteria manager, the administrative director of the hospital. And then we formed our canteen improvement team in the hospital and that has like people from finance because one of the things that we identified in our formative study was the people who are making the decision about menu were the people from finance department because that had the direct implication on the cost. And then NCD department, there was a nutritionist involved and our study research staff and consumers were involved and we had, first, we trained this, we made this kind of team and then we trained them on what
to make a common understanding of healthy diet,

what are we talking about when we are saying healthy diet?

So there was a lot of differences

in that perception as well.

So we had to get a common understanding on that.

And then we made implementation

and monitoring plan in collaboration with this team.

And then we did three rounds of training

with the cafeteria staffs, specifically shifts.

And then this training would be more interactive,

like interactive conversations

between our research staff and the canteen staff.

And then we focused on healthy eating plate

and then healthy cooking.

And so adding vegetables and fruits wherever possible,

just add fruits and vegetables.

So fruits was not at all available in the canteen

when we started this intervention.

And whole grain was not at all available,

not a single option of whole grains,

and/or using oil, oil was used very evidently,

so we focused on these three things.

And then we did our workshops to determine like what we add

and what we remove from the existing cafeteria.

So we decided to add like fruits, banana
and apple was chosen because there was no system for refrigeration. And then these two are like banana would be consumed on the same day, apple could be stored for a long time.

And then we added whole grains like oats, buckwheat, whole wheat, roti and then drinks, water was made available free and whole and vegetables. So we added salad like cucumber and radish are very considered, so Nepal salad means cucumber and radish, it’s not like greens like here. So every meal they would offer either cucumber or radish on site.

And we introduced popcorn and then for the snack, we introduced fruits and again water. And we removed all white bread, puff is like a croissant and donut, puff is like a croissant and donut, and then biscuits, cake. And then we also altered rice. So we mixed white rice with brown rice and then we completely got rid of white bread and all the sugar-sweetened beverages were completely off. So they were not available even if on demands. And then we did a kickoff event where, we made a big fuss of it, we had a kiosk desk.
and then we were talking like all the research staff were talking to the consumers who were dropping in the canteen, discussing about these changes like how they felt, like why we are doing the changes.

We made like big posters in the cafeteria and then why should we, just basically justifying these interventions. And then we did a weekly observation checklist and monthly CIT meetings. So we would, one of the research staff and one of the CIT team members would go visit all of this cafeteria every week and then see whether it was sustained or not.

So this is like we added oats for breakfast and then we added this fresh water. We wanted to make it look beautiful because we were getting rid of all of the sugar-sweetened beverages. And then because there was a lot of pushback for two things, specifically two things. One was the sugar-sweetened beverages. And the second was white rice, mixing white rice and brown rice. So a lot of people who are angry for, because they are so used to eating 100% white rice, so then we had to add 100% white rice,
595 00:31:34.517 --> 00:31:38.433 but it was not available on the counter,
596 00:31:40.050 --> 00:31:41.910 it was available like behind the scene.
597 00:31:41.910 --> 00:31:42.900 It was not visible.
598 00:31:42.900 --> 00:31:45.030 So only those who really, really wanted would
599 00:31:45.030 --> 00:31:46.320 like ask for the brown rice
600 00:31:46.320 --> 00:31:48.920 and would get like 100% white rice and would
get it.
601 00:31:50.790 --> 00:31:52.920 And then the individual level intervention
602 00:31:52.920 --> 00:31:57.120 had 16 core courses like goal setting, stress
management,
603 00:31:57.120 --> 00:32:01.980 healthy eating and mostly they had four
themes.
604 00:32:01.980 --> 00:32:04.410 So one was healthy eating, promoting healthy
eating,
605 00:32:04.410 --> 00:32:09.410 physical activity and demoting alcohol, to-
bacco and stress.
606 00:32:12.030 --> 00:32:17.030 And so this is the current status of the data.
607 00:32:23.010 --> 00:32:24.540 This is the current status.
608 00:32:24.540 --> 00:32:28.380 Actually we have completed
609 00:32:28.380 --> 00:32:32.880 the behavior intervention as well.
610 00:32:28.380 --> 00:32:30.720 Behavior intervention was randomized,
611 00:32:30.720 --> 00:32:33.300 so everybody received cafeteria intervention.
612 00:32:33.300 --> 00:32:35.970 So all four cafeteria received intervention
613 00:32:35.970 --> 00:32:40.080 and then we measured the outcomes before
614 00:32:40.080 --> 00:32:41.880 and after the cafeteria intervention.
615 00:32:41.880 --> 00:32:43.203 And we also wanted to do,
616 00:32:44.207 --> 00:32:47.310 to compare it with control-timing.
617 00:32:47.310 --> 00:32:48.900 So we did a six month gap.
618 00:32:48.900 --> 00:32:53.760 So we measured the outcomes and then we
measured it
619 00:32:53.760 --> 00:32:56.430 after six months without any intervention.
620 00:32:56.430 --> 00:32:59.763 And then six months after the cafeteria inter-
vention.
So this is the baseline characteristics of the participants. Most of like mean age was 32 years, most of them were like our ethnic groups. So that whole town is more predominantly this ethnic group. I'm also from this ethnic group and most of them were married, 69%, like 89% were Hindu religion, they identified themself as Hindus. And they had like high school education, more than 76% because this is the hospital setting, a lot of them are nurses and doctors, and paramedics. So after the cafeteria intervention, this is what we found for the health outcomes. Systolic blood pressure decreased by 5mm, just after only screening without even cafeteria intervention and more after the cafeteria intervention. So it was at statistically significant. We saw a statistical significant difference in systolic blood pressure, diastolic blood pressure and fasting blood sugar. The fasting blood sugar is little bit weird because in the cafeteria intervention we saw a little bit increase in fasting blood sugar and then there was a decrease in low density lipoprotein and others there was not a significant difference.
in other outcomes. So this is interesting.

So when we look at the whole grains at baseline, they were only eating like 0.87 servings per week. At six months, it changed to 0.51 servings per week. And then after the cafeteria intervention, it was 4.22 servings per week. So it has a, considering that they eat only one meal in the cafeteria, one or two. And the decrease in refined grains are like amazing like about 20, there is 22.8 servings. Like we eat a lot of refined grains, 22.8 servings per week. and then it decreased to 21.2 servings. There was increase in consumption of fruits and nuts. Then there was a decrease, a little bit of decrease in consumption of sugar-sweetened beverages, but it was not that statistically significant. So people were still drinking it outside of the hospital. So this is like basically our experience in like how we develop, contextualized this intervention and what had its effect on change in diet. Like it definitely had significant contribution.
in change in quality of diet and then few of the health outcomes as well.

I just have a quick,

did you collect data on how much of it was all outside

of the hospital setting

and outside of their work setting?

Yeah, we do have that.

Whereas, changes made
in the home like shipped in the kind of rice that they had

and other kinds of- So the total sales

in the cafeteria had not changed.

So there was not a very significant drop.

And that we also asked individually if they had,

how many times did they eat in the cafeteria? But unfortunately, we didn’t ask that in the baseline.

But then the overall

like the food sales when we analyzed the food sales

had not changed in the cafeteria.

So there was no not much drop.

Well, I think Mayer was asking,

did they change their eating patterns

at home? Home, oh we didn’t...

Oh, sorry, we didn’t ask that.

We didn’t ask that.

That’s a very interesting, though.

So now we have extended this program to schools.
We have enrolled 22 schools that I have not included in this presentation and then conducted a randomized control trial among with this behavior intervention.

We couldn’t do the cafeteria intervention, although it was on the plan because all schools were closed for the past like one and a half years. It’s still closed in Nepal, but as soon as it opens we will go for the cafeteria intervention in this school as well.

So next is to evaluate the package of essential non-communicable. I will go a little bit quickly-

So as I explained before the WHO proposed this cost-effective program, it's called package efficiency of non-communicable diseases.

A lot of LMIC adopted it, it got very famous in Bhutan as well. And then Nepal also adopted this and this intervention, it aims for early detection and modification of risk factors and avoidable medications for prevention
and treatment of four major NCD, CVD cancer
in Nepal we focus on two cancers, breast cancer
and cervical cancer,
chronic respiratory diseases and diabetes.
And PEN also aims to reinforce health system
and integrated NCD care into the primary healthcare.
Right now, what’s happening is NCD care
is very more delivered by the private sector.
It’s not integrated into the public sector
and not much was available in primary healthcare
before this program.
And the government endorsed it in the 16 districts in 2016
out of 77 districts in 2016
and expanded to 33 district in 2019,
and the program is still in expansion.
So different versions of PEN is available,
so this is for Nepal.
Prevention of heart attacks, stroke and kidney diseases
and focusing on heart attack, stroke,
rheumatic heart disease, diabetes
and chronic respiratory diseases,
management of asthma and chronic respiratory diseases,
and assessment and early diagnosis of cancer.
And it only focuses on breast cancer
and cervical cancer in Nepal.
And then our goal was to measure
these implementation outcomes.
So we were measuring acceptability, adoption, appropriateness, cost, feasibility, fidelity and penetration, and sustainability.

And so these, I just wanted to give this example of how we are measuring it and then we compare it with the other project that we are doing.

So for the PEN we are mostly doing at the provider level and health facility level.

For the other study, we're doing at the individual client level as well.

So like satisfaction of the program itself and what percent of the health workers actually completed the training.

And for the feasibility we were seeing what percent of eligible clients were screened and what percent of eligible clients were treated.

And for the feasibility, we observed health workers whether or not they were following the protocol.

On the prevention of heart attack, stroke and kidney disease.
and health education and management of chronic obstructive diseases and assessment of cancer.
And then for the penetration,
we are estimating the percent of active pain clinics in the past a year.
And for the implementation cost,
we are estimating the capital cost and as well as indeed cost from the perspective of health facility and for the sustainability also,
we will be estimating the annual facility level cost and reporting system.
And the project right now, we had a target to do the quantitative assessment of facilities, 106 and then we have achieved that.
We’re doing the qualitative interviews and data analysis is in process.
This is one of the typical health center in western Nepal.
So just to give you like a glimpse of what we are actually talking about.
And this is like inside the health centers where we are doing the facility.
So it’s nothing close to any smallest clinic that you would go to in the US,
but it’s a very typical in context of Nepal and other NMIC.
So the third is cervical cancer.
Again it was investigator initiated intervention
and then we wanted to collect data for government to scale it up. So more in like international guidelines are advocating HPV testing, which is considered highly sensitive and accurate and women also prefer the self-sample collection, avoiding the speculum examination in Nepal. So there has been already conducted a study in Nepal that women prefer self-sample collection and that also did in better screening and covers in context of Nepal. So again, we are estimating the same implementation metrics, but in context to the previous study, we are doing it at in client level and provider’s level. For at the client level, we will measure satisfaction and partner support. At the provider’s level, we will measure the adoption, we measure the feasibility at the provider’s level where in the previous study we were doing it at the health facility level and then we are measuring the fidelity at the client’s level, whether or not they are following the protocol for self-sample collection and home care adherence for post-treatment and cost for health facility level,
if we are replicating this program, what would be the cost that or health facility I will have to incur and sustainability like what would be the annual cost to sustain this program and what can be the reporting system within the government health system?

So we have target to enroll 1500 and then we have completed enrolling 926.

self-sample collection has done for 226 women and we are starting HPV testing this week.

So we really, really excited, we had a meeting this morning.

about it and then we will conduct a follow up survey as well.

And this is the setting that that’s,

this is a like, just to give a glimpse of the setting.

where we are working.

So these are the women in this municipality and our health staff visit them and they give them

like instruction, they’re reading the instruction.

how to collect the self-samples.

So the volunteers, we have network of like 34 volunteers.

in that municipality as well.

So we ask them, they facilitate to bring women

in one courtyard we’re doing in the open spaces.

and then they get the sample collection kit

and then they collect the sample.
and give back to our research staff. And then our research staff is like answering if they have any questions and then showing this little pamphlet about the self-sample collection. So quickly, I’m not taking much time now. And then we do have a lot of challenges to particularly in research, but I’m not getting into that like we have limited resources. We have like geographical challenges, Nepal’s mountainous country, like lack of human resources, everything, all of that is there. But today, really wanna focus on like implementation research challenges. So first is stakeholder-related and it’s of utmost importance to engage stakeholders in every process. And it’s like a lot of time that we really need as an implementation science researchers, we really need to allocate that time to engage with stakeholders and we have to do it in multiple setting. It’s not like one meeting. And then you give information, you collect feedback. It doesn’t work in case of implementation science research, for example, we spent whole one year just doing formative study to develop that intervention
and even for the PEN study, we had to collaborate with the Ministry of Health, Epidemiologic Disease Control Division and there was a lot of discussion ongoing. We made a lot of changes in the design and we initially planned to do it only 16 districts, but then because of their demand, we added that we did it in all seven provinces and 32 districts. So there was a lot of changes in design, in positive way and it took a lot of time and it was a little bit complex because everybody comes with their own agenda and research has been viewed as like a short-term project, within implementers as well as the evaluators. So when we approach any stakeholders, like they were saying, okay, you collect data for three months and then you go, so nobody is thinking about long-term engagement, long-term partnerships. And it took some time to like really make them understand
00:47:05.760 --> 00:47:08.850 and convince that this is not a one-time event
00:47:08.850 --> 00:47:11.790 or even like few times event.
00:47:11.790 --> 00:47:15.630 And there has been challenging in health system,
00:47:15.630 --> 00:47:18.480 for example, there has been external factors
00:47:18.480 --> 00:47:20.370 and then we had to keep changing the study designs.
00:47:20.370 --> 00:47:22.350 It’s not like a randomized control trial protocol.
00:47:22.350 --> 00:47:26.370 You just come with a protocol and do it,
00:47:26.370 --> 00:47:27.870 though, it didn’t work like that.
00:47:27.870 --> 00:47:32.670 So for example, when we were doing the PEN survey,
00:47:32.670 --> 00:47:34.080 suddenly the COVID hit us
00:47:34.080 --> 00:47:35.610 and then we had to change the strategy
00:47:35.610 --> 00:47:37.950 and then there was this big flooding,
00:47:37.950 --> 00:47:42.450 and then we had to change the health facilities,
00:47:42.450 --> 00:47:45.060 the selected group that we selected randomly,
00:47:45.060 --> 00:47:46.890 but we had to exchange it to different
00:47:46.890 --> 00:47:48.810 because roads were all blocked.
00:47:48.810 --> 00:47:52.743 And then there was this government,
00:47:53.868 --> 00:47:56.370 they really after they knew that we are doing this study,
00:47:56.370 --> 00:47:59.850 they chipped in, they also added some funding.
00:47:59.850 --> 00:48:02.820 Nepal health research council got into
00:48:02.820 --> 00:48:04.740 as an official partner of this study
00:48:04.740 --> 00:48:07.050 and they wanted to do it faster.
00:48:07.050 --> 00:48:12.050 So we had to really like add on like human resource
00:48:12.720 --> 00:48:13.590 that they paid for.
00:48:13.590 --> 00:48:17.340 So we had like eight resource assistants that were hired.
00:48:17.340 --> 00:48:19.230 And what they really wanted to,
because they want to enroll it fast in the country,
they wanted the resource faster.
So they actually paid for eight more resource assistance
and then we had to like change
the whole field plan and everything.
So that’s very expected.
And there is a strong bureaucracy in the health system
that also caused some misunderstandings, and some delays or there are a lot of transfers happening.
So we engaged with one stakeholder
and that person get transferred or something else,
a new person come in, so it introduces some delays.
And then there is a lack of evaluation plan
within the health program.
So for example, the PEN or HPV screening
within the government sector, they had this program,
but they did have any evaluation plans.
So we had to come, build completely new after the program
has been evaluated, has been like implemented.
So it has some limitations in terms of what kind of data
that we need and what kind of data that we collect at that point.
And then the routine healthcare data did not,
was very incomplete and then more often,
it may also be inaccurate.

So for even for the PEN, we wanted to see what percent of the clients had been screened, but there was no data available to do that.

And there was some issues with IRB.

IRB was, we had a really long discussions with IRB because they didn’t understand implementation science research.

In Nepal it’s very, very common for IRB to also give scientific feedback. So they would say why this many women that you are recruiting, like why this many things, why is not there is a control group for the HPV care.

And then we have to do a lot of back and forth with the IRB and it took quite some time.

And then there was researcher-related, the people we were hiring in the Nepal didn’t have any background on implementation science research.

And then we had to like first train them, they didn’t have any experiences.

There was complete disconnect between the implementing like government agencies that were implementing the program and the evaluating bodies that was university-wide.

to create these new linkages before we initiate the program.
And then there was this very weird challenge that we did not have same understanding of implementation science research even among the implementation researchers. So like there was like big pushback to use any kind of framework, which is we, as an academician find very rare because we think that, okay, implementation science is a framework and we give so much emphasis to the framework.

And then there was this group of people who were implementation scientists who were saying frameworks are just for academic exercise, we don’t use framework. Like, and then we had to like had two hours conversation like why we wanna use framework and like they were debating why we don’t want to use frameworks. So anyway, so those were I think, were explored on the way.

So there were some opportunities as well. I think, for me, number one reason for pursuing the implementation science is it has a potential to make a huge impact on public health. There are lots of promising research areas. Nothing is really happening in the context of implementation science research, so we can do a lot.
And there is a like real need to embed this implementation science within healthcare because healthcare program are running on their own. They are never evaluated. Like nobody really knows what’s really going on because there is no activate proper data system or analyze mechanism, or feedback system. So I see them as this is a limitation to do the study right now, but I see them as a big opportunity for us. And then we can have a really, really big leap in this context of LMIC. And so compared to 10 years ago, even like when we were starting Donna in 2015, there was not that much of resources on IS and now we have all of these worldwide IS networking within the LMIC, I’m part of two of such networks and there is a growing interest from funding agency, NIH like National Cancer Institute has this big interest in implementation science. NHLBI is taking a lot of interest. There is interest from Gates Foundation, we got a smaller grant from Resolve to Care, another organization and there is also a lot
of interest at the local level from WHO. WHO also chipped in in our PEN implementation evaluating program. And there is also a big opportunity in the program evaluation funding from non-government organizations if we want to explore that. And there are also training opportunities available. A lot of free resources is available online. And then in our master of science in public health course we also offer two credit courses on implementation science that our students can take and other researchers all over Nepal can also take that course. So with that, I would really like to thank you all for your time and really nice to be here. This is one of the typical mountain villages in Nepal. Thanks so much.

So I think Luke Davis has a question. We don’t really have a lot of time just one. Okay, well, why don’t we let Luke ask his question?

If Luke, if you’re still here... Luke, if you’re still here, we’d love to have you ask your question.
and then I think we probably have to wrap up.

Great, it’s kind of a big question so-

We can’t hear you, oh there you go.

I’ll just share it and perhaps we’ll have a chance

to talk more when we meet on Friday or when we meet in person Archana.

But I think the general question is

how do you collect implementation measures such as fidelity

in a real world setting without interrupting that setting?

I think that’s the big question you gave,

some examples of the challenges,

but it’d be really fun to hear,

you know, if you just have one brief example

or how you’ve been able to do it

’cause you’ve obviously figured out how to do it

for lots of different conditions.

So thanks so much for the talk.

Yeah, thank you.

Thank you Luke, really nice question.

We struggled a lot to do, to collect the fidelity of our PEN protocol implementation.

And then we discussed a lot among ourselves and with staff how we can do it.

So one of the things that we decided

before we get in the field, we decided that

we will just let the health workers know
that we are observing them and then assessing the fidelity,
but would not tell like which exact patient
and we will like observe them from a distance
and we would obviously get their consent.
So, and then we did that approach
and then when the feedback from the field
work came up,
it was like in Nepal, they were so busy.
Like they didn’t care about altering,
that was the general impression.
They were so busy, like they didn’t care
about our assessment at all. (chuckles)
So it was good for us,
but it is good for the health system.
but yeah, of course, I think even after that
it would be a difficult, it’s pretty challenging
to do that.
Great, thanks.
I think we probably need to conclude
given the time,
and I know you’ll be meeting with many of
us
and you’ve met with many of us before
and as I mentioned, there’s still opportunities
for people who have things they’d like to discuss

with Archana to connect with William and try to find a time.

So thank you all and have a good rest of your day.

Thank you. Bye.