

Introduction to Maternal Infant Young Children Nutrition
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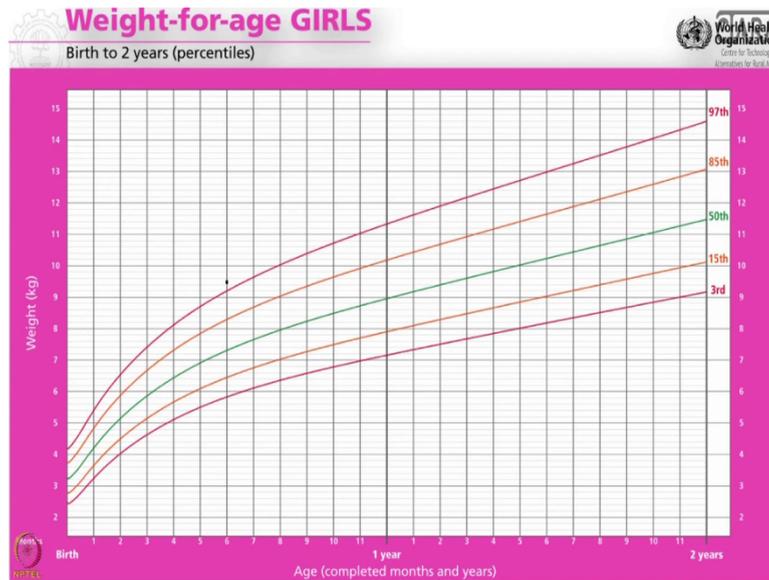
Lecture - 2
Session - 1
Evidence from the Field

Hello, everybody. Thank you for attending my first session, the first part. Now I will talk about growth charts a little bit, just a portion not so deep because I will be going deep diving in my last session. But I will be discussing how children grow. What are the standard reference curve, as per WHO growth charts. And I will also show some of the success stories that we have had. Just by teaching proper breastfeeding techniques, mothers can have excellent milk transfer from her to the baby and children grow remarkably beautifully, not only on weight and height.

I will also be discussing some of the data, which has come from our projects in urban slums and some of the districts like Banaskantha district, Sabarkata district, and our program in urban slums. So, thank you so much for watching, and I hope you enjoy this session.

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So, when you go to a paediatrician when you bring your small children, a paediatrician plots children's height and weight. If they are small children say under 2 years of age, they take length for age chart, and when they are older than 2 years, they check the height for age. Length means they check the length of a child, while babies are in the lying down position. And height is when children are in the upright position.

So here, what we are trying to do is, here we are taking the length of a child because the child is under 2 years of age and we are checking the weight. And then they use this WHO growth chart, which I will discuss in detail in my last session, but just quickly show you what kind of growth chart we have.

So basically, this is the World Health Organization, you can see it on the right-side corner. So those are WHO growth charts, and these are basically standard references. What they have, there are about five lines over here 50th percentile, 85th percentile, 97th percentile, and this chart is weight for age, and it is for a girl child, so that is why it is in pink in colour. On the x-axis, you have this basically, months and year, and on the y-axis, you have weight in kg.

And basically, your average children should be on the 50th percentile. So, 50 per cent of those children are on this percentile on the green line. And that is what my target is. My target is to bring all these children who are undernourished or malnourished I want to bring them at least to the 50th percentile to bring that is my target.

But in that target what happens is, so many children do so beautiful on mother's milk when mothers are taught proper breastfeeding techniques, and then once they know what food to

start at 6 months of age these children just do amazingly well that they not only they grow in weight, but they also grow in length.

So, this is what I, whenever I say the target weight gain I talk about bringing children to the 50th percentile. And this is the weight of the child and this is the age of the child. And say, what happens is suppose any child who comes to me suppose a child is 3 months old, and basically I would plot I would take 3-month old and then I will look at what is the weight of the child, and then I plot it.

So, this is what I follow. And I do recommend all the paediatricians everybody including mothers, families, healthcare workers, they have to start plotting this growth chart then only you will know how children grow. So, you know, that how in first three months, children grow very fast weight wise they grow almost a kg a month, and then they slow down.

So, if you have slow growth in the first 3 months itself, right, then you will have underweight. Remember I mentioned to you on my first slide that we have so much of underweight and wasting like children are low on weight as per height, and that is because they are not growing as much as they should in the first 3 months and that is when you are seeing so much for underweight and so much of SAM, and all our weight stunted children are not coming out of malnutrition.

And this is the chart that I have plotted for this particular child. So, what we are seeing over here, is this baby has been put in a supine position and in a lying down position and we are checking the length of this child, and we are also checking the weight of this child. And from date of birth, we can find out if the child has reached a target or not, whether the length is okay or not, whether height is, whether weight is okay or not, so that is what we are trying to do over here. And there is a particular way of checking the height and length that we will I will also mention how to do it, and then we basically plot this child.

So, whenever I asked this question to any healthcare worker or even doctors what do you think though weight, what do you think the age of this child, and they are all by and large 90 percent of them they say, oh, the child looks like a one-year-old child, but no, this child is not one year old. And look at it this child is only 6 months old. And because mother was taught proper technique, look at the weight has gone to like 9.42 kg.

And then as the child is growing beautifully on mother's milk, and this is 97th percentile. What does it mean? It means, that baby is growing very beautifully and has become big and has gone above 97th percentile, which is absolutely fine for me because this is breastfed baby. Now if this baby was on formula feed or on cow's milk, then I would have been worried because formula milk and cow milk will cause a lot more obesity, and yeah, it will cause undernutrition also, but if suppose there is no diarrhea or pneumonia then this children will become obese and they will have issue with pre-diabetes and diabetes later on.

So, if baby is on breast milk, then these children are protected from all kinds of diseases. Including infections including NCDs, non-communicable diseases. So, I am not at all worried if child is beautifully breastfeeding and growing well.

Now as baby is growing fast look at the length. Look at this, only 3 per cent of children are of her length. Now, in India, as I mentioned to you, in India, what is the issue, we have almost 36 percent children who are below third percentile. Below third percentile means only 3 percent children should be below third percentile, but in India, we have almost 36 percent children who are below third percentile. So, this is what we need to change.

We need to change this narrative that Indian children are small, and they will be, they are short, and they are not short, they are short because we are not doing the right thing for them. So, look at this child length is 97th percentile. And if she continues to get and see the girl child, if she continues to get good nutrition in first 6 months and of course after that also, and if she does not get any childhood illnesses like diarrhea and pneumonia, then this child will do very well. I mean, she will be extremely tall for her for her age. And this is what we want because as per latest Lancet article which had come out you know, couple of months a few months ago, I would say and that article say that average height of a girl okay 19 year old woman is only 5 feet in India, and the average height of a men is only 5.4.

Can you, I mean, this is what I want you guys to understand that why do we have such short people in our country because they are not taken care of in first 6 months 12 months of age. I would say 12 months because even if this child is suppose if this child same child this is a weight and if this child does not get proper nutrition after 6 months of age say she gets only watery dal and watery rice and you know hardly anything, no protein, no eggs or no proper

thick dal then they will not grow they will basically continue on the same weight and eventually they will come down, but length takes time.

So, child may become stunted a little bit kind of they fall on the growth if they do not get enough food. But as I mentioned, if you can really work hard on mother's breast milk techniques, then they children they do pretty well. Because even after 6 months of age, they continue to get a lot of milk, but it is very detrimental to not start proper food after 6 months of age.

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So, I am going to show on another case study. This is a boy child. Look at her eyes. You can see her see his eyes mother is looking so happy. Child looks pretty tall, looks pretty healthy. And if you look at this child, eyes are looking so sharp, looking directly into the camera. This is the beauty of well grown children. Because of breastfeeding has console right and breast milk has so many ingredients, which are so important for IQ development for development or just physical growth for brain development for everything.

And you can just make are just looking at the eyes, they just look so sharp and very, very attentive. This is again the 6 months old baby child, baby boy, look at the weight, 10 kg weight,. Now, in my WHO growth chart session I will be discussing another target weight gain. But if I basically plot this 10 kg for 6 months old boy child.

So, let us say this is the WHO growth chart. This is the weight for age chart for boys. It is a percentile chart means basically it tells us the percentile of each child, and then basically that where he falls, and then basically, your age and your weight. So, I plotted the 6 months old child with 10 kg weight, and look where he is, above 97th percentile, which means, only 3 per cent children come over here in this area.

And normally, only 3 per cent children should come below. But as I mentioned, in India, we have 36, almost 30 probably with the latest data, I would say about 30 percent and one-third children are below this third percentile, so this is important. And same child, if I plot his length, look at the same child. As the child has grown beautifully on mother's milk, I am talking about the weight now look at the length, look at this child is tall.

Now, he is going to be tall there is no doubt about it. Because whatever length that you have gained, if you continue to give good nutrition, this child is going to keep growing taller and taller. And if there are no other medical issues, if there are, if she does, if he does not get severely sick with diseases, then he will become tall. So, this is what I wanted to explain what needs to be done in India is basically your saw that focus on your not only just maternal nutrition, but breastfeeding skills and complementary feeding.

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Average weight gain per week and per day as per WHO for a male child

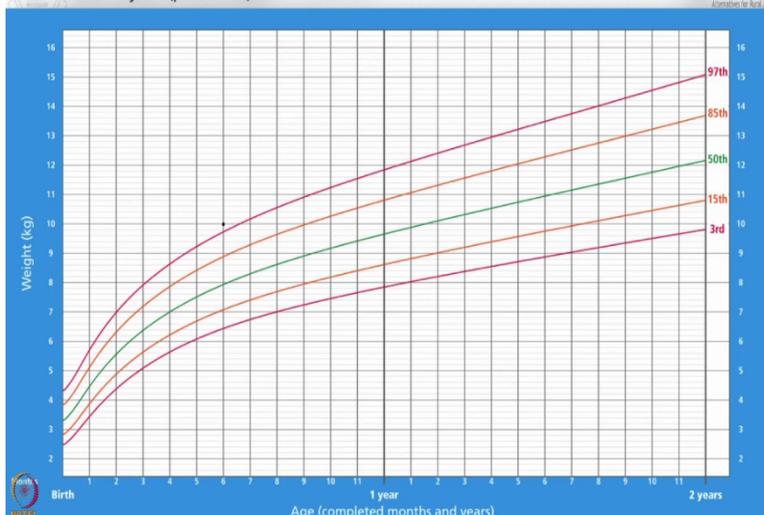


Age in weeks	Weight kg	Weight gain per week	Weight gain/day
1	3.5	200	28.5
2	3.8	300	42.8
3	4.1	300	42.8
4	4.4	300	42.8
5	4.7	300	42.8
6	4.9	200	28.5
7	5.2	300	42.8
8	5.4	200	28.5
9	5.6	200	28.5
10	5.8	200	28.5
11	6.0	200	28.5
12	6.2	200	28.5
13	6.4	200	28.5



Weight-for-age BOYS

Birth to 2 years (percentiles)



Now, one more thing I wanted to mention over here. Now, again, this child is suppose not given proper food after 6 months of age complementary foods, then they will not gain weight,

their muscle will start melting, and that I will explain in my second session that how this muscle start starts melting.

And once their muscles start melting, they start becoming leaner and leaner and leaner. And then the stage comes where they become underweight, moderately underweight or severely underweight or, as per the age. So again, it is very, very important that after you start proper breastfeeding, that 6 months, mother needs to know what food to start, specifically, I focus on protein-rich diet, here.

So, this is the target weight of a basically, these are WHO tables that is given on their website WHO website, and we have picked up for WHO table for a male child. Because I, I personally believe that girls can grow as big as male children. So, if mothers know how to breastfeed that baby, at least in first 6 months, I have noticed that they grow as beautifully as boys. So generally, I always talk about the target weight gain for male child and I do kind of expect, because I have seen those results in my projects that these children even girls children should gain that much weight.

So here is the basically age and weeks. So, these are basically first week, second week, third week, fourth week. And here you see the average weight gain per week, as per WHO growth chart. So here you can see that average weight gain in first week is 200 grams. Now what we are taught in pediatrics that, first two weeks, babies do not gain weight and first week, by 7 days, they come back to birth weight and all that.

But the thing is, if you look at WHO growth chart that is not what it suggests. What WHO is suggesting is basically baby gained 200 gram in first week. And in just 2 weeks, babies are gaining 500 grams already by second week of age. So, and this is when does this happen, when mothers are taught proper breastfeeding technique. So, I really insist that mothers should be taught breastfeeding technique, before pregnancy or before delivery so that you understand how to do it.

And during delivery time or maybe just immediately after delivery, that baby needs to come on mother's breast so that they can learn how to latch and then for 2 days while mother is in the hospital, you need proper guidance to teach her how to breastfeed. And then you can see like literally by 4 weeks child has already gained 1100 grams do you see over here.

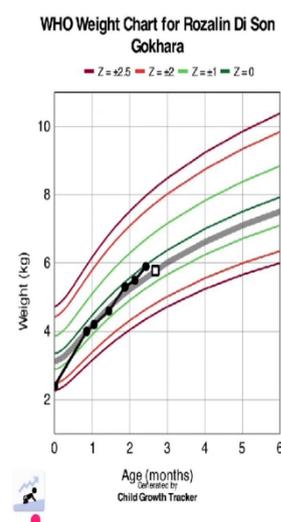
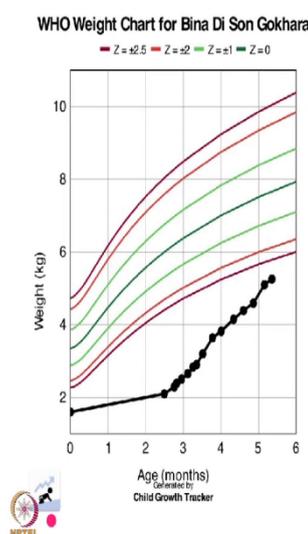
So, by 4 weeks, not even 1 month complete. So, this is what my target weight gain is. And if you're doing really well, you will see that these children grow not just 1.1 kg, in first month, but sometimes they grow 1.5 kg and I have seen that in my low birth weight babies also. And if you look at the weight gain per day see look at the weight gain.

When I talk to again, all healthcare workers, their weight gain target is just 15 to 20 grams, 15 to 20 grams that is it, their weight gain target per day. And look at the weight gain target which is recommended by WHO look at this. You cannot have just if you baby needs to be gaining 42.8 grams per day, then if you expect only 20 gram weight gain, then right there in 3 months, your baby will become malnourished.

So please understand that the this is a weight gain per day, this one is weight gain per week, and this is your weight kg, what, what will be the expected weight, at first week, second week, and this is in babies who are born 3.3. So, babies were not born 3.3 kg because that is their average birth weight of a boy child. So, if that is not happening, then you what you will see is that then those babies need to catch up very fast.

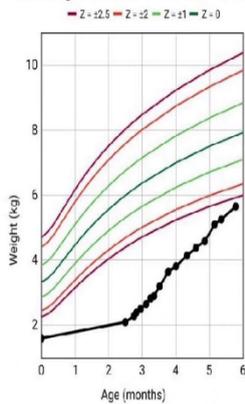
And what I have, again experienced in my projects that if low birth weight babies, if they are again taught proper techniques, they are gaining much higher weight than even average babies normal babies. So please focus on the technique of breastfeeding.

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WHO Weight Chart for Bina Di Son Gokhara



Date	Age	Weight	Z-Score
06 Jul 2019	0 days	1.6 kg	-4.5
20-Sep-2019	2.5 months	2.1 kg	-7.9
28-Sep-2019	2.8 months	2.29 kg	-7.7
30-Sep-2019	2.8 months	2.39 kg	-7.5
04-Oct-2019	3 months	2.504 kg	-7.3
09-Oct-2019	3.1 months	2.65 kg	-7.1
13-Oct-2019	3.3 months	2.83 kg	-6.7
16-Oct-2019	3.4 months	2.9 kg	-6.6
21-Oct-2019	3.5 months	3.2 kg	-6.0
29-Oct-2019	3.8 months	3.64 kg	-5.3
05-Nov-2019	4 months	3.82 kg	-5.1
15-Nov-2019	4.3 months	4.15 kg	-4.7
23-Nov-2019	4.6 months	4.39 kg	-4.4
01-Dec-2019	4.9 months	4.59 kg	-4.2
10-Dec-2019	5.2 months	5.1 kg	-3.5
16-Dec-2019	5.4 months	5.258 kg	-3.3
29-Dec-2019	5.8 months	5.66 kg	-2.9



Generated by Child Growth Tracker



So, these are some of the growth charts, which we have tracked on child grow tracker's app, which I will discuss in my last session. And here this is how, basically, is z score chart. Again, that I will discuss in our presentation in last session. So here, what has happened that this baby is, has come just 1.8 kg at birth, and it for first two and a half months, mother's, mother did not know how to breastfeed.

So, you can see there is hardly any weight gain. Do you see, there is no catchup at all whatsoever. Now, I would have expected a lot of catchup growth in first 1 month, 2 months, right. But here because mothers did not know proper technique, that growth is not there. But as soon as at two and a half months, one of our students helped mother you know how to breastfeed this was a male student, actually.

In fact, he taught this mother using our health spoken tutorial, and look at the weight catch up. And this is the mother from slums of Bhubaneswar Odisha, and so this is our result. And same thing it is a similar kind of baby born small less than 2.5 kg, but basically, this mother was taught breastfeeding technique, right at birth. So, when, when she knew that technique at birth look at the catch up growth, right from minus 2.5 minus 2.5, standard deviation has jumped to mean. Mean is where the 50th percentile is, so that is our goal.

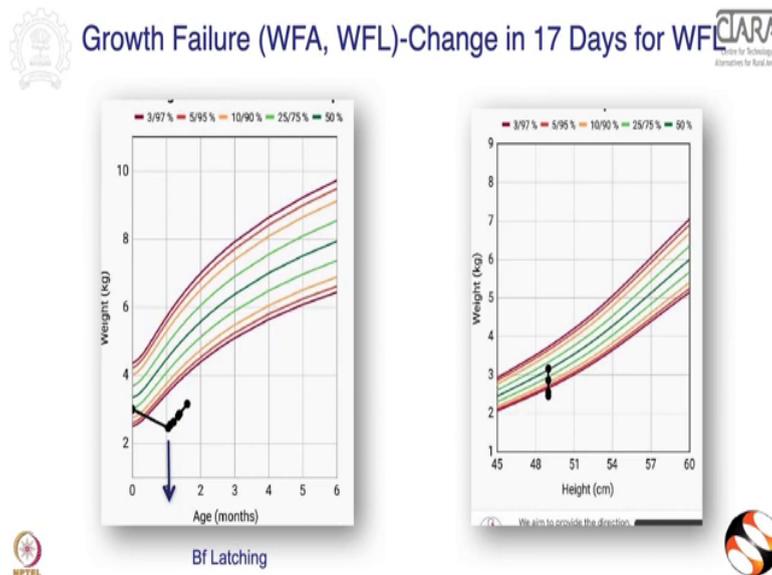
So, within two and a half month, this baby reached the 50th percentile. And look at this child struggling to get into 50th mean, or even the last line just because child a mother was taught much later. So, we do not want this because this is what happens in all most of our children, if they are not supported. Mothers are not supported, there is tremendous amount of growth

failure, and then there is no road catch up and these children, then they suffer because, that weight gain in first 3, 4 months are very important because that will improve their IQ level later on.

And these children, they do no do, if they don't reach them mean, they do not do well, physical growth also, so, they are small. And these children have high risk of developing metabolic diseases later on.

So, here it is a same child that I explained earlier. Now, eventually, you can see the child has is reaching the now minus 2.5, deviation standard deviation and then, eventually this child will come slowly and steadily because, of course, its chronic malnutrition for almost two and a half months. So, this child will reach at least 10th percentile in next probably 2 or 3 months or so. So, this is what this is our case study coming from slums of Odisha.

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Now, this is another case study where you can see that this is in fact, my case study in urban slums of Mumbai, where this is weight for age, and this is weight for length chart. So, here age, I saw this baby at 1 month of age, and baby's weight was 3 kg so was born pretty good size, okay and slums. But because there was no support, look at how that weight went down.

So, at 1 month, this baby fell to almost 2.5 kg so lost about 500 grams in first 1 month. Can you imagine? Now if we had not seen this baby, this baby would have died of diarrhea or

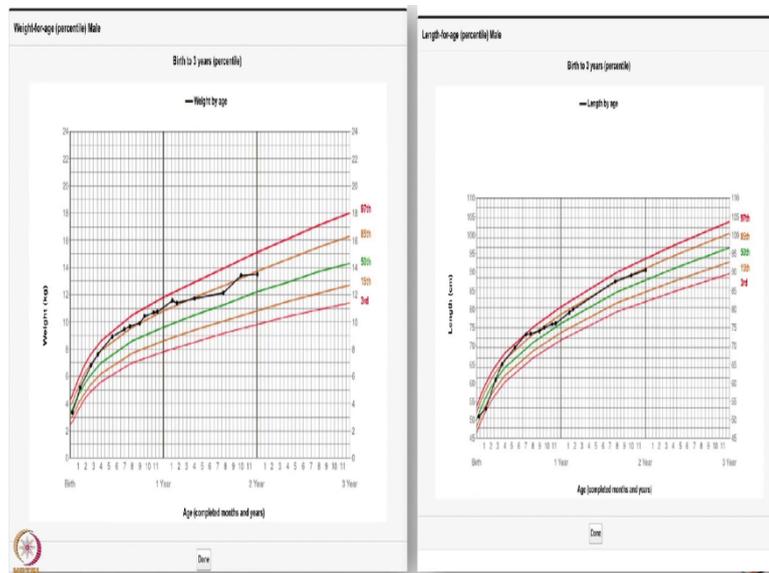
pneumonia or any of this because how long can babies survive without proper latching right proper milk transfer.

So fortunately, we saw this baby. As soon as we saw, we taught mothers proper breastfeeding technique and then see baby is going up, you can see and our goal is to bring this baby to 50th percentile, which is your, average.

Now, if you look at the weight for length child in this child, so we also check the length, and we wanted to see where was that baby's weight as per length. And because it was early on, length was still okay, but look at this weight. So, basically, baby was SAM Severe Acute Malnutrition, which I will discuss in others sessions. What is SAM, what is MAM, and then just in the matter of 2 weeks, the child came from SAM to average, just in a matter of 2 weeks.

This is what I mean is, the conversion of SAM to normal is so fast in babies when they come early in your intervention. More you weight harder it becomes for baby to come out of acute malnutrition. So, this is a slide on that.

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Now, this is some of the other growth charts that I wanted to show because these are all longitudinal growth chart. When I was working in urban slums of Mumbai, so this is again, percentile growth chart, you can see five lines over there, 97th percentile, 85th percentile 50th, 15th, 3rd.

So, this child, basically, this is weight for age chart, and this is length for age chart for the same child. So, this child was basically born not so bad, urban slum, so was born at around 15th percentile, and then, length was basically average, so about 50th percentile. So, as baby was growing weight, you can see how fast baby is growing. This is all only on mother's milk, see how catching up is occurring.

Even if baby is born, not so bad, 15 percentile, but look at the weight going up. And as the weight is going up, you can see the length picking up. So length picked up at almost 7 months, baby became almost 97th percentile. And then as baby was on it after 7 months, probably mother started complimenting food as per our advice so weight continued to stay on the 85th percentile and the length basically is also an 85th percentile.

So, if you now plot this child's graph, for length for weight, this child will have perfect BMI because the child is tall, so tall children will be bigger. Remember, I do not want a short child to be bigger. Short children, if they are bigger or they are heavier those children have a higher risk of metabolic diseases. Here we are talking about BMI.

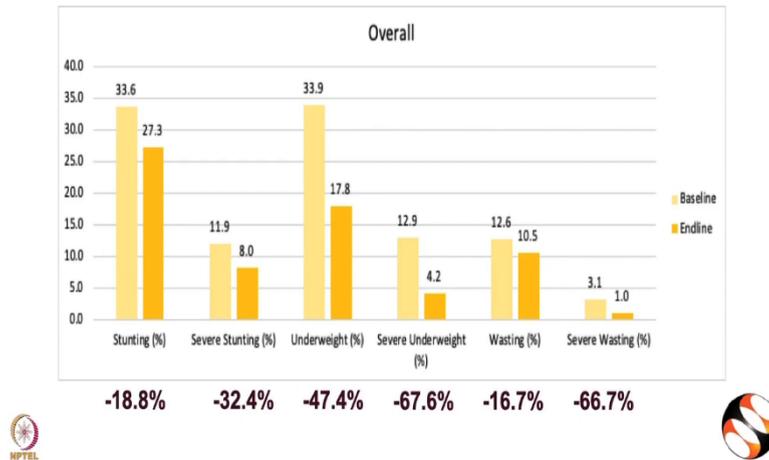
So, in this child, although he is heavy, he is tall. So, this child imagine coming from urban slum, like, I would say, the poorest quintile as far as well cause and this child is doing amazingly well. And he will definitely do well in school also, because, look at the weight, length and weight incremental or catchup growth.

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N=286, Reversal of Malnutrition at the end of 1 year



Now, this was about just different growth charts, individual child. Now, I want to discuss some of the data from one of the NGO that we were working in, basically, I was a founding medical director of this NGO foundation for mother and child health, and we had started this NGO in 2007.

And in that NGO, I stayed for almost till 2017. And over a period of time, we saw thousands of children, and we learnt a lot from these children, how they grew, what was working, what was not working. Because we had a very sophisticated software program to monitor these children.

Coming from the U.S. for that it was very, very important for me to do a plot all these children on digital graphs, all the digital data. Because, I was not used to writing anything on the paper, whatever in U.S. we did, we did everything on the laptop or on the computer or on the phone. Especially, we had computer in each and every room where we would see all these children. So, we did similar kind of data collection in software, which was customized for this for this program.

So, what happens is for 6, 7 years, we were not seeing results. So, we were not seeing results in a sense babies were not gaining good amount of weight, babies were not developmentally doing too well. Even after 6 months in spite of telling them “give this food or that food” they were not gaining length also and weight also.

So those 7, 8 years was learning period for us. Once we figured out where the problems were we tried to get the solution. So there was a lot of solutions that we worked on, and this is a

whole kind of hands on solution, which came from learning from the field. We did not want to start formula, we did not want to start cow's milk, even if babies did not gain weight.

Initially, what we were doing, we were kind of telling, we felt that mothers were not listening. So, we kind of kept blaming mothers, but that was not the case. And then we started reflecting that whatever we are saying to mothers, whether that is effective or not, and we realized, it was not. So, once we fix those loopholes, once we fix those issues, then we were just started seeing amazing results.

And this is, so then after a 7, 8 years, we said we need to now document all this children's data perfectly and we should basically see how these children do after 1 year of intervention after 2 years of intervention. The reason we did 1 year of intervention because many of the children, we worked in Dhobhi Ghat area, and in many of these, many of these children were basically migrated from UP and Bihar, for just for say maybe 6 months, 1 year. Because their fathers came as Dhobies in this area and they would go back again, in a year time.

So, we took about 286 children and we took only those children who came to us under 2 months of age. Because we wanted to see, that how did these children do when they came very early on? Remember, I told you that we will be able to give very good results if they came early on. So, we took only those 286, say, we took all the children who were under 2 months of age, we did not leave any child.

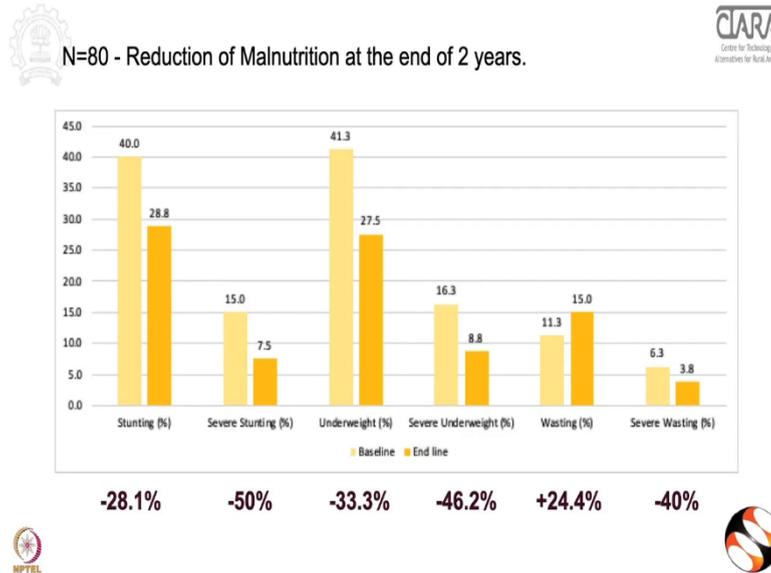
Of course, we had many, many children who came about 2 months of age also. But again, we just wanted to see the effect when they came early on. So here this was the effect, we had basically 286 children who came between 2013 to 2016. And this was the data that we present in a World Breastfeeding Conference.

And here what we are seeing is the children who were severely wasted at the time of admission, we could decrease this their severe wasting or we call it SAM Severe Acute Malnutrition by 66.7 percent. And overall, wasting overall malnutrition we decreased by 16.7 percent. Severe underweight decreased by 67 percent, which is remarkable and underweight decreased by almost 50 percent.

But most remarkable thing was about stunting. So, now, right now government has this mission to decrease stunting by 2 percent every year. But look at the stunting, we reduced in just 1 year 18 percent. So, imagine if we have this kind of protocol of framework that we

used in a program, imagine what results it would bring in India. And this is in 1 year of age. And I wanted to, I mean, many children moved back to UP, Bihar because most of them had come from that area, but some of the children continued coming till 2 years of age. So, I wanted to see what happen if the children continue to come till 2 years of age.

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So, there was a significant reduction of malnutrition at the end of 2 years, so the severe wasting reduced by 40 percent. Wasting basically wasting increase, and I will tell you why wasting increase, I will come back to that. Severe underweight decreased in these 80 children who came up to 2 years of age by almost 50 percent, underweight decreased by 33 percent, and severe stunting decreased by 50 percent. Look at this severe stunting, reversal 50 percent that is remarkable.

And your even just a regular standing decreased by 28 percent. Now, again, so 2 years, so government plan is to decrease stunting by like, by 4 points, like 4 percent, But like, say, like 4 points, but here, we could decrease in 2 years, we could decrease from 40 to 28 that is almost 12 points that is reduction or 28 percent stunting.

The reason we had increase in wasting and this is kind of shown in many other studies, that when children grow tall, when they start growing tall, a lot of time what happens that whatever nutrients they are eating, they are going into the height development in the growth development, and they then the height grows much faster than the weight.

And that is why a lot of children, they kind of stayed underweight, not necessarily SAM because SAM children came out of many children came out of SAM, but some of these children they kind of they were lean and tall, but this children I was not worried at all because they were going tall, they had no infection they were doing well, developmentally they were doing well.

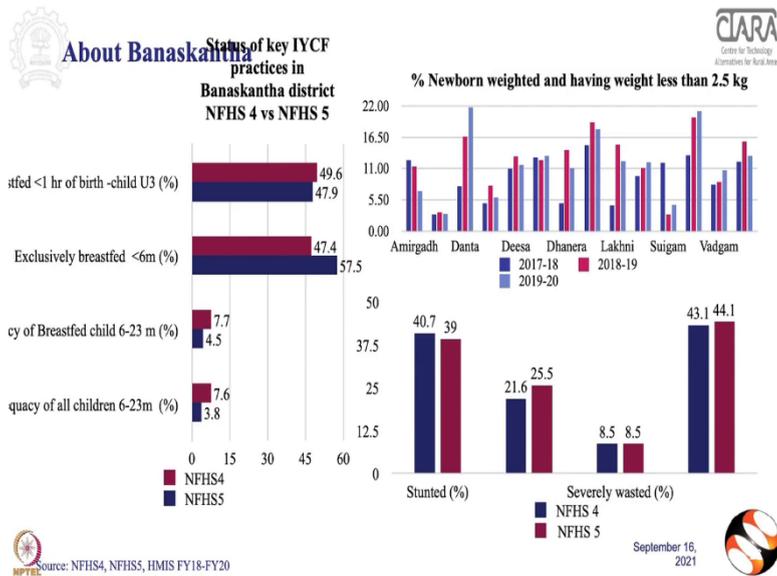
So, this is what I want to explain that, it is important that we look at wasting more in a holistic way, not just point blank that oh my god wasting increased. Wasting increased because children are getting taller.

Now, this is another learning for us. What I would recommend is, that, when children are gaining fast, when they are gaining height, fast, I would like to give them a lot more energy, but not in the form of carbohydrate. Because when you give too much carbohydrate in these children, we have a risk of metabolic diseases in these children.

And NFHS 6 data, NFHS 5 data shows that that these children are becoming much bigger, and there is a risk of metabolic diseases. So, I would give them a lot more fat, which are good fat, which will give them energy and that that protein will be used for other functions. So, this was our data from one of the project in urban slum.

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Now, that was data from urban slums. I also want to discuss, we did one case-control study in Banaskantha district because it is one point, one thing that you show results in one small slum community, where you have a doctor, you have a nurse when you have nutritionist, you have field workers, social workers, so there is it is like a lot of resources are required to take care of that child.

But we wanted to see, that if we strengthen government infrastructure, then what would happen. What would happen if you have amazing strengthening of government infrastructure how would that translate to? So, Banaskantha district, this was the data initial data of comparing NFHS 4 versus NFHS 5 data. Here what we are showing is that there was a reduction in first our breastfeeding from 49.6 per cent to 47.9 percent.

Exclusive breastfeeding rate went up from 47 per cent to 57.5 percent. Basically, the frequency of breastfed child was basically I would say that this is adequacy of breastfed child went down from 7.7 percent to 4.5 percent and adequacy in all children including breastfed and non-breastfed, I am talking about the complementary feeding, it went down from 7.6 percent to 3.8 percent.

So obviously, the complementary feeding was not, they were not doing well in terms of complementary feeding. And here, this is the data from different areas. So, I would say Taluka, so Amirgadh, Danta, Deesa these are all the different Taluka as of your Banakantha. And this was again NFHS 4, NFHS 5 data of nutrition indicators.

So, you can see stunting went down just a little bit, not too much. Your wasting, wasted children like severely malnourished children went same there is no change in it. This is your probably wasting data, not severely wasted, but just regularly waste children. So, it includes both moderate and severe. And here you can see basically wasting went up, but look at the underweight, underweight went up to. So, this is the issue.

So, we had started this study in 2020, around November time. And this was a data which had, which was collected for NFHS 5 during November 2019. So, we started this study with this kind of background.

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Research Design



Broad Social Concern: Child Malnutrition in India

Research Approach: Quantitative

Research Strategy: Experimental (Randomized Controlled Trial)

Sampling:



Method of Data Analysis: Statistical/Numerical methods



September 16, 2021



Analysis



- Data analysis tools: MS Excel, Minitab, Emergency Nutrition Assessment (ENA) software

- Sample Distribution

	Intervention	Non-intervention	Total
Boys	149	124	273
Girls	123	136	259
Total	272	260	532



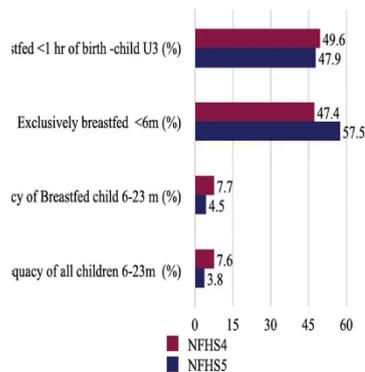
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About Banaskantha

Status of key IYCF practices in Banaskantha district NFHS 4 vs NFHS 5



Source: NFHS4, NFHS5, HMIS FY18-FY20



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It was a quantitative analysis, it was experimental. Initially, we had started as a randomized control trial, but we had to switch to case-control for some administration issues. And then basically, we did a randomized trial of intervention and non-intervention group. And we took about 20 PHC, and each PHC had 16 mothers, 15 to 16 mothers. And basically, we had 218 mothers from actually it was, so 218 mothers from each PHCs.

So, what we did, basically, I will tell you about the intervention non-intervention group. So, in the intervention group, what we did, we asked mothers to come during pregnancy. Now, during pregnancy, we taught these mothers proper breastfeeding techniques, so we showed them four tutorials.

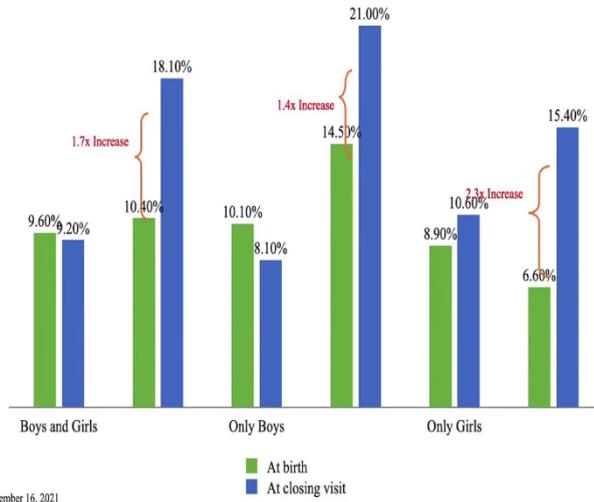
What are those four tutorials during that time? We had cross-cradle hold, we had latching, we had sidelying hold, and we had a laid back hold. Actually, in Banaskantha, we had physical methods to increase breast milk supply. So, this is some of the tutorials that we showed, you know, in ANC time.

And then during PNC time when mother delivered, we immediately did one hour breastfeeding, and we also did kind of live demonstration of how to breastfeed the baby. So, they were taught 45 points of counseling. And then these were the number of boys and girls so 273 children in boys and 259 girls, okay so a total of 532.

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Prevalence of Underweight (Z-score < -2)



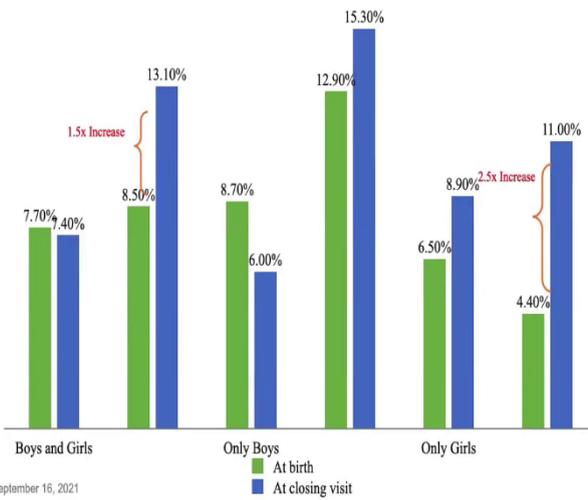
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Prevalence of moderate underweight (-3 < z-score < -2)

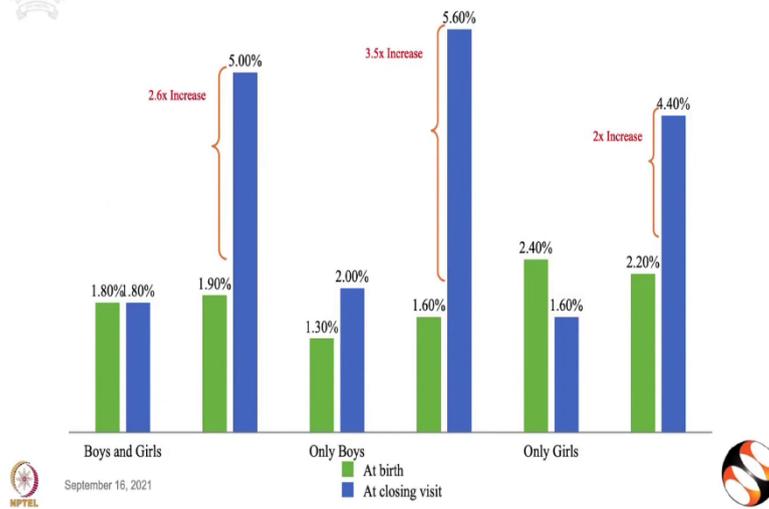


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Prevalence of severe underweight (z-score < -3)



Now, this was the data, here, this is what I want to show you. So, basically the you can see here this is a boys and girls combined. Here only boys, so this is your intervention I mean, at birth and this is at closing visited at 6 months. So, this is intervention, this is non-intervention, this intervention, non-intervention, this intervention, non-intervention. So, this is what we can see that babies who are in non intervention area they had lot more growth faltering.

So, you can see the underweight went up to from 10.4 to almost 18.10, so almost basically you know, it was kind of 1.78 times increase in growth faltering. They become underweight in non-intervention group. Here in boys we could decrease some amount of malnutrition in intervention group, but look at its non-intervention group it got worse.

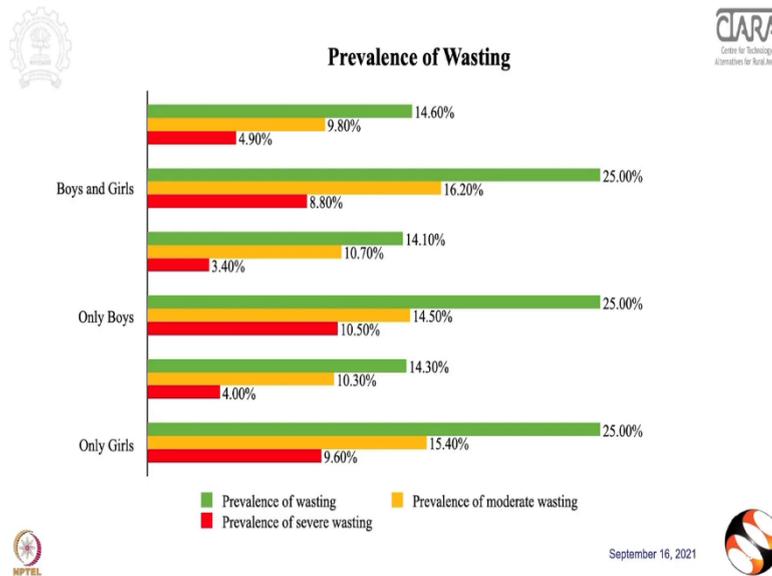
Similarly, in girls, unfortunately in girls, we still have this issue of girl child not being taken care of in Gujarat. So, you can see that girl children in intervention group did not do well, they had some amount of growth faltering, but look at the growth faltering occurring in non-intervention group on 2.3 times increase in faltering in those girls.

We also need to see prevalence of moderate underweight so, that was basically your underweight now, we want to see moderate underweight, MUW, where the weight falls between minus 2, minus 3 standard deviation. So, everywhere you can see there is a growth faltering occurring much more in non a non intervention group.

Same thing for gold children in intervention there was some amount of faltering in girl's cohort. This is why as SUW Severe Underweight, look at the difference now. As babies are

growing smaller babies are born small, and if those babies are not taught proper latching and look at the growth faltering occurring. Tremendous amount of growth faltering occurring when boys as well as girls, and this is what we need to stop.

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This is a prevalence of wasting. Wasting means I told you too thin, too thin for height or length. So, again, this is all 6 weeks visit so at 6 months, I would say, like a closing visit. So, 6 months, these are boys and girls, you can see, the end of the study. In intervention group, there was 14.6 percent wasting and in non-intervention group there was 25 percent wasting.

So, similarly in all age group, not all age group but in all different kind of boys and girls, there was a tremendous faltering of when it comes to wasting. So, children were becoming more wasted in non-intervention group. So, in non-intervention group what we did basically we just continued what it is done at a government level.

In government level mothers are not brought during pregnancy time to teach them on I mean on cross-cradle hold or any of these breastfeeding skills they are not being supported as much which they should be. Healthcare workers have no clue how to latch the baby, so in those all those, we can, like, we just continued same what it was what the standard of care, but our, in our intervention group, we did everything, whatever that helped needed to the mother, just to learn the proper technique. And then we followed up these babies on a weekly basis till 6 months of age.

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MIYCF Training in Talasari, Palghar

500 HCWs were trained from 2016-2019





IYCF Indicators – 2019/2020 CAS



Block	Children Breastfeed at Birth(%)	Children (0-6) Exclusively Breastfed(%)	Children (6-8months) Initiated CF(%)	Children (6-24months) Initiated CF(%)	Children(6-24months) receiving CF with Diet Diversity(%)	Children(6-24months) receiving CF with Diet Quantity(%)	Children(6-24months) receiving CF with Appropriate Hand Washing(%)	Children with 1 year completed Immunization(%)
Dahanu	28.57	8.44	8.49	7.6	80.99	79.75	96.65	5.93
Jawhar	18.35	25.1	26.36	25.42	82.45	93.48	98.76	0.77
Mokhada	0	1.28	4.82	7.88	89.83	79.88	96.61	0.86
Palghar	45.09	39.9	42.03	42.04	89.76	92.78	98.95	9.72
Talasari	44.44	50.44	54.84	59.22	76.34	94.16	98.78	1.32
Vasai	34.86	10.11	11.49	13.23	91.71	96.31	99.08	2.68
Vikramgad	17.97	14.6	13.26	15.06	73.72	86.64	97.06	0.14
Wada	62.82	34.01	35.79	37.22	87.3	86.26	98.5	3.61



- 13.6 % reduction in stunting in Sabarkantha post latching project in 2018/19



So, this was another result from Talasari Palghar. And then there are 500 healthcare workers were trained from 2016 to 2019. And you can see this is Talasari we did the training and you can see much better results than other blocks that children were doing, children were breastfed at birth, children exclusive breastfed, you can see all green.

Yes, they still need some amount of training, more training on dietary diversity, but otherwise children did pretty well when it came to IYCF. And this was done almost 4 or 5 years ago and we continued kind of training them on a regular basis. Another thing is we also had done which Sabarkantha district training and we had implemented this latching project in all the PHCs of Sabarkantha. Sabarkantha is another district in Gujarat.

IT is a second biggest district after Banaskantha, Banaskantha is the biggest district. And what we saw the result of that actually, there was no other program going on. We did not even focus on complementary feeding. Latching was a first project actually. So just by focusing on latching, latching means the proper breastfeeding technique how baby latches on to mothers areola, we could see the reduction of stunting by 13.6 percent in NFHS 5 data.

So, NFHS 5 data, which came out Sabarkantha, we saw tremendous reduction of stunting. That is all because an initially the Sabarkantha district had 51 percent stunting rate as by NFHS 4. So, DHO confirmed that this was the only program which was going on. So, if you look at the NFHS 5 data for Sabarkantha NFHS 4, 5 actually, the minimum adequate diet is only 3 percent.

So, we did not focus on those diet at all. So, if we had focused on complementary feeding, if we had focused on mother's nutrition, this, this reduction would have been remarkable. It would have gone up to 25 to 30 percent reduction in just maybe 1 year, because we continue in this project basically from 2018-19.

And there was a NFHS 5 survey was done in November 2019, November, December. So it was just basically result of 1 year of intense latching project in that district. So, I think we can do much better in India. So, I am going to end my presentation over here.

Thank you for watching this part 2 of my first session. And I am sure you kind of understood how children grow, how they do. And I am sure it must be really heartening to see those, healthy babies, chubby babies, tall babies, and looking so beautiful and bright. You also must have seen our data coming from urban slums to like small community versus different blocks and district level.

And hopefully, now we will see data in NFHS 6 for Gujarat because we have already started working on these different breastfeeding techniques and complementary foods and maternal nutrition. So, I am looking forward to that data coming in NFHS 6 for Gujarat. Now, the third session, I will be discussing the framework. So, what worked in a program so I will see you then thank you.