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### **Short report: Ultrasound in BPKIHS, Dharan, Nepal (NF 13030)**

This is my second visit to Nepal. Dr Achala has come to meet me in Biratnagar airport. I was only two and a half hour late, which was not more than could be expected, I was told. People here are very patient and used to waiting. I get both my suitcases, we get in the car and head for Dharan. Last time I arrived at night and the sounds seemed even more intense, or maybe I've gotten used to it.

It all started one and a half year back when I came to Dharan in eastern Nepal to help the doctors in the department of obstetrics and gynecology to do ultrasound. At that time we had two ultrasound machines in the department, one I had brought from the University Hospital of North Norway. Both machines are quite old, so I was very happy to find out that they were still working and in good shape. We start working already in the afternoon when we arrive Dharan. This time I'm only staying two weeks so we want to get going. Last time we focused on biometry measurements, placenta location and how to use ultrasound in different kinds of emergency settings. This time I had to see how things had worked out before deciding what to focus on.

Next day starts with audit and report from the previous day. We meet in the "class-room" at 8 o'clock. The report is in English with a Nepali/hindi accent, very fast and with all the abbreviations you can possibly think off. After a while you get used to it and you pick up at least some of what is going on. If I don't get it in the meeting I usually find out what's happening during the round which is next. During the round we find out which patients we should see for ultrasound. Some of the other doctors go to do OPD (outpatient department) where 150-200 patients come for check-up. Some of these patients are also referred to us for ultrasound.

The USG (ultra sonography) room is about 16 square meters. In this room we can fit in two ultrasound machines and two beds. It has been arranged like that so I can go from one doctor to the other. The patients don't seem to mind. I think they are used to it. In the ward there are no private rooms and sometimes the patients even have to share a bed if there isn't a bed for everyone. Dr Achala and Dr Shailaja are the two doctors who will do ultrasound. I walk in between and show how to optimize settings on the machine, hold the hands to get the right sections for measuring biometry in the fetus, looking for location of the placenta and so on. We try not to stress. Many patients are waiting outside and every time we open the door to let someone out it seems as if more people have come. But Achala

and Shailaja have improved so much since last time I was here. Now doing biometry is done in the right sections and we are focusing more on anomalies. They even manage to see the four-chamber heart and sometime three-vessel view when looking at the fetal heart. We do all types of scans: early pregnancy, gynecological scans, postpartum and obstetric scans. Every other day I have a lecture in the morning after the audit. The day doesn't end until around 5-6 p.m. At the end of the day some of the other doctors come in and join us.

BPKIHS, BP Koirala Institute of health and Science is a partly private, partly government teaching hospital. Last year they had 10532 deliveries, 6815 SVD (spontaneous vaginal delivery), 296 vacuum deliveries and 3421 LSCS (lower segment caesarean section). Looking at the numbers one has to take into consideration that the possibility for intrapartum surveillance is limited. There is no possibility for CTG monitoring. There is one CTG machine that is usually used for NST (non-stress-test). Some of the most common causes for ceaserean section are previous ceaserean section, fetal distress/meconium stained liquor, failed induction and obstructed labor. In addition to this, the women delivering in the hospital is a selected group. In eastern Nepal 59.3 % of the women deliver at home. Especially women from eastern mountain and Eastern Hill subregion deliver at home with the percentage being 73-80%.

Even though the antenatal care (ANC) has improved it is still not organized properly and some pregnant women have several ANC visits and some have none (15 %).

Maternal death in BPKIHS is 0.23 %. The percentage of stillbirth is approximately 1.4. The perinatal mortality is approximately 1.3%.

Some facts from Nepal Demographic and Health survey 2011.

**Table 9.2 Number of antenatal care visits and timing of first visit**

Percent distribution of women age 15-49 who had a live birth in the five years preceding the survey by number of antenatal care (ANC) visits for the most recent live birth, and by the timing of the first visit, and among women with ANC, median months pregnant at first visit, according to residence, Nepal 2011

Number and timing of ANC visits	Residence		Total
	Urban	Rural	
<b>Number of ANC visits</b>			
None	6.3	16.1	15.2
1	2.9	6.5	6.1
2-3	19.0	29.7	28.6
4+	71.8	47.7	50.1
Total	100.0	100.0	100.0
<b>Number of months pregnant at time of first ANC visit</b>			
No antenatal care	6.3	16.1	15.2
<4	67.3	47.7	49.7
4-5	19.9	26.8	26.1
6-7	5.6	7.6	7.4
8+	0.7	1.8	1.7
Don't know/missing	0.1	0.0	0.0
Total	100.0	100.0	100.0
Number of women	418	3,730	4,148
Median months pregnant at first visit (for those with ANC)	3.4	3.8	3.7
Number of women with ANC	392	3,128	3,520

**Table 9.7 Assistance during delivery**

Percent distribution of live births in the five years preceding the survey by person providing assistance during delivery, percentage of births assisted by a skilled provider, and percentage delivered by cesarean section, according to background characteristics, Nepal 2011

Background characteristic	Person providing assistance during delivery								Total	Percentage delivered by a skilled provider <sup>1</sup>	Percentage delivered by C-section	Number of births
	Doctor	Nurse/midwife	Health assistant/AHW	MCHW/VHW	FCHV	Traditional birth attendant	Relative/other	No one				
<b>Mother's age at birth</b>												
<20	16.9	25.3	3.3	2.5	4.0	11.2	35.5	1.4	100.0	42.1	3.0	1,101
20-34	18.0	17.9	4.1	2.0	3.1	11.6	40.2	3.0	100.0	35.9	5.0	3,910
35-49	10.8	9.0	3.1	0.8	2.2	8.0	56.8	9.4	100.0	19.8	5.0	380
<b>Birth order</b>												
1	27.9	27.1	3.8	2.2	3.5	7.5	27.4	0.7	100.0	54.9	7.4	1,833
2-3	15.3	16.4	4.3	2.3	3.2	12.6	43.5	2.3	100.0	31.8	4.2	2,368
4-5	6.3	12.1	3.0	1.8	3.1	16.1	50.8	6.8	100.0	18.4	1.7	773
6+	2.2	7.9	2.9	0.5	2.1	11.0	61.2	12.3	100.0	10.1	0.0	417
<b>Place of delivery</b>												
Health facility	47.3	49.5	2.2	0.8	0.0	0.0	0.2	0.1	100.0	96.8	13.0	1,905
Elsewhere	0.9	2.0	4.8	2.7	5.0	17.4	62.4	4.8	100.0	2.8	0.0	3,487
<b>Residence</b>												
Urban	43.4	29.3	1.5	0.2	1.6	4.9	17.5	1.5	100.0	72.7	15.3	503
Rural	14.6	17.7	4.1	2.2	3.4	11.9	42.8	3.3	100.0	32.3	3.5	4,888
<b>Ecological zone</b>												
Mountain	6.2	12.7	2.3	1.4	3.6	2.3	65.6	5.9	100.0	18.9	1.4	428
Hill	14.8	15.6	3.7	1.6	3.2	2.8	52.8	5.5	100.0	30.4	3.7	2,130
Terai	20.8	22.1	4.2	2.5	3.2	19.0	27.3	1.0	100.0	42.8	5.8	2,833
<b>Development region</b>												
Eastern	22.4	19.6	4.7	2.2	2.7	6.3	40.2	1.8	100.0	42.0	6.2	1,269
Central	18.5	17.4	4.4	1.1	2.6	18.2	36.2	1.7	100.0	35.9	5.9	1,717
Western	17.8	20.0	4.5	1.8	3.4	11.3	38.6	2.6	100.0	37.8	3.8	1,007
Mid-western	8.9	19.8	2.5	2.5	2.7	7.0	47.8	8.9	100.0	28.7	2.4	793
Far-western	13.2	17.4	1.3	4.2	6.3	7.5	46.5	3.5	100.0	30.7	1.8	605
<b>Subregion</b>												
Eastern mountain	6.5	13.7	4.8	3.5	3.8	3.6	62.0	2.0	100.0	20.3	1.5	101
Central mountain	11.6	14.1	3.6	1.7	6.0	1.9	55.0	6.0	100.0	25.7	4.3	96
Western mountain	3.8	11.7	0.7	0.4	2.4	2.0	71.5	7.5	100.0	15.5	0.2	230
Eastern hill	10.6	14.5	5.6	0.2	3.7	3.9	57.0	4.4	100.0	25.1	2.0	416
Central hill	31.5	13.1	1.8	1.3	2.2	1.8	45.4	3.0	100.0	44.5	10.0	495
Western hill	12.2	17.3	6.9	1.3	3.3	3.9	52.0	3.1	100.0	29.5	2.2	604
Mid-western hill	7.0	17.3	0.9	3.0	2.5	2.4	52.9	14.0	100.0	24.3	1.5	367
Far-western hill	6.8	15.8	0.7	2.9	5.1	0.8	62.6	5.2	100.0	22.7	0.8	247
Eastern terai	31.0	23.3	4.2	3.1	2.0	8.0	28.0	0.4	100.0	54.3	9.2	752
Central terai	13.4	19.6	5.6	0.9	2.5	26.8	30.5	0.7	100.0	33.0	4.2	1,126
Western terai	26.2	24.0	0.9	2.6	3.6	22.4	18.4	1.8	100.0	50.2	6.2	402
Mid-western terai	13.2	26.2	5.1	2.8	2.3	14.3	34.4	1.7	100.0	39.4	4.6	301
Far-western terai	23.6	21.3	2.1	7.1	10.2	16.9	16.9	1.8	100.0	44.9	3.4	252
<b>Mother's education</b>												
No education	6.9	12.5	3.7	2.0	2.5	16.9	50.5	5.1	100.0	19.4	1.8	2,550
Primary	11.5	20.5	4.5	1.8	4.5	8.0	46.7	2.6	100.0	31.9	4.1	1,079
Some secondary	27.9	25.5	4.0	3.1	4.5	6.6	27.4	1.1	100.0	53.4	6.3	1,039
SLC and above	47.2	28.8	3.4	1.0	2.0	2.9	14.5	0.1	100.0	76.0	12.9	723
<b>Wealth quintile</b>												
Lowest	3.0	7.7	2.8	1.7	3.0	5.9	67.1	8.8	100.0	10.7	1.0	1,390
Second	7.1	16.6	4.7	2.6	3.7	16.5	46.5	2.3	100.0	23.7	0.8	1,182
Middle	14.2	21.8	5.5	2.2	4.0	16.6	34.9	0.9	100.0	35.9	4.6	1,133
Fourth	26.6	26.4	4.7	2.0	2.5	12.1	24.9	0.8	100.0	53.0	7.1	938
Highest	52.8	28.7	1.0	1.7	2.5	3.8	9.2	0.4	100.0	81.5	14.1	748
<b>Total</b>	<b>17.3</b>	<b>18.8</b>	<b>3.9</b>	<b>2.0</b>	<b>3.2</b>	<b>11.3</b>	<b>40.4</b>	<b>3.1</b>	<b>100.0</b>	<b>36.0</b>	<b>4.6</b>	<b>5,391</b>

Note: If the respondent mentioned more than one person attending during delivery, only the most qualified person is considered in this tabulation.  
 AHW = auxiliary health worker; MCHW = maternal and child health worker; VHW = village health worker; FCHV = female community health volunteer; SLC = School Leaving Certificate  
<sup>1</sup> Skilled provider includes doctor, nurse, and midwife.

During my stay we diagnosed many women with suspected intrauterine growth restriction (IUGR). Evaluating growth is difficult. Usually the EDD (estimated date of delivery) is from last menstrual period (LMP). Sometimes they have an early ultrasound scan done and we manage to find out if the LMP fits the scan. If not we try to manage from looking for oligohydramnios, symmetric vs. asymmetric growth, blood pressure and other risk factors. We saw lots of women with molar pregnancies. Did early pregnancy scans. One woman presented with threatened preterm labor, we suspected isolated esophageal atresia, which was confirmed after delivery. Two women presented at term with fetuses with severe hydrocephalus and woman was diagnosed with a fetus with skeletal dysplasia. One of the pediatricians

came to have a look and we again talk about starting up having monthly meetings with the pediatric department. We went to talk to the hospital director and rector. The hospital and staff in the department of gynecology and obstetrics are very grateful and we hope to continue the cooperation. Their feed back concerning training is that they find it very beneficial for the department especially with the hands-on training and the fact that training is done with the machines they have in the department instead of some new, more advanced machines.

I'm very impressed with the staff. They are dedicated and even under these difficult conditions they manage to get by. They care for the patients and try to keep high standards. We talk about the future and hope that Achala will get started doing a biometry study for us to have charts that fit the population since even normally grown fetuses seem to be very much smaller than the average european fetus. At the same time we have to find out how to improve the antenatal care in both rural and urban areas.

Many plans and hopefully this work will continue.

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Sources:

*Nepal Demographic and Health survey 2011*, Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland.

*Cesarean section in BP Koirala Institute of Health Science, 2010*, medical student assignment, Martin Drevvatne, Ida Hokland, Anette Knai and Øystein Tollåli.