Supplementary table 5: Study characteristics
Excluding case-control and cohort studies. For these, see table 1.

	Background information							Study population			Oxytocin exposure			Context					
No	Author	Publication year	Study period	Country	Study type	Aim of the study/intervention	Data source	Inclusion criteria	Exclusion criteria	Study population	With oxytocin	Oxytocin rate	Other oxytocin rates	Facility (including level, rural/urban, private/public etc)	Annual births and ratio	Oxytocin protocol and monitoring Oxytocin indication	Monitoring guideline	FHR	Monitoring practice (actual practise reported)
1	Hassan	2012	2005-2006 2007-2008 2010	Palestine	Interventional one-armed pre-post study	Quality of care	Interviews with women if labour and birth occurred between 7 AM and 4 PM. 30.6% reported that they did not know if they were given oxytocin.	GA > 37 weeks. Singleton, cephalic pregnancies. Uncomplicated pregnancies.	Birth before arrival and delivery by elective cesearean section.	134	43	32.1% (baseline)	Post-intervention: 10.9% 12.1% 17.7%	Referral governmental hospital. Urban. Public. CS available.	4000			IA	The providers reported that they use oxytocin without the use of infusions pumps machines, continuous foetal monitoring and partographs.
2	Agha	2019	April to June 2014	Pakistan	Observational cross-sectional study	Quality of care	Direct observations during day time only.	Not specified		310	208	67%		126 district level referral facilities and primary health care facilities. Public sector facilities (28%) and private sector facilities (72%).	4-133 per month		Partographs		FHR was monitored in 40% of births. Partographs was used in 3% of births.
3	Mukamurigo	2019	December 2014 to January 2015	Rwanda	Observational cross-sectional study	Quality of care	Medical records, not validated.	All term births. Singleton, cephalic pregnancies. Uncomplicated pregnancies. Spontaneous onset of labour. Positive foetal heart on admission. Women aged 20-40 years.	Previous caesarean section, HIV positive, severe bleeding in third trimester or on arrival, hypertension or preeclampsia, diabetes mellitus, and having been transferred to a hospital other than the 18 selected facilities after starting labour and before giving birth.	435	52	12%	Primigravida: 14.3% Multigravida: 10.3%	18 healthcare facilities in Kigali City and the Northern Province: Eight health centres (28.7%), seven district hospitals (40%), one provincial hospital, one private hospital, and one referral hospital. CS available.	> 600 Ratio: 1 staff:3-5 beds		Partographs		Partographs was used in 84.8% of deliveries.
4	Onah	2007	December 2005 to January 2006	Nigeria	Observational cross-sectional study	To evaluate pain perception among parturients.	Self-reported questionaires 24 hours after birth. 28% incorrectly filled.	Unspecified vaginal births. Spontaumous onset.		101	20	19.9%		Four health institutions: The University of Nigeria Teaching Hospital (UNTH), the Enugu State University of Science and Technology (ESUT) Teaching Hospital, the Mother of Christ Maternity Hospital and the Madonna Infirmary. CS available.					
5	Spitzer	2014	November 2009 to January 2010 August to	Kenya	Interventional one-armed pre-post study	Quality of care	Medical records, not validated. Data for oxytocin exposure missing for 3.2% pre- and 11.4% post-intervention.	All births. GA > 28 weeks.		Pre-intervention: 1741 Post-intervention: 1812	592	33.8% (baseline)	Post-intervention: 27.4%	Moi Teaching and Referral Hospital (MTRH). Urban. Public. CS available.	7000				
6	Frega	2013	October 2011 to February 2012	Burkina Faso	Observational cross-sectional study	To compare women with and without Female Genital Mutilation type I and II.	Medical records, not validated. Complete dataset for all included women.	All vaginal births. GA > 37 weeks.	Lack of information about FGM (20 deliveries), premature birth (9 deliveries), and cesearean section (24 deliveries).	180	74	41.1%		San Camillo Hospital in Nanoro. CS available.	233 births in total during the study period of 5 month.	10 IU in 500 mL of physiologic solution.		IA with stethoscope	
7	Muylder	1990	September 1982 to September 1984 October 1984 to October 1986	Zimbabwe	Interventional one-armed pre-post study	Quality of care	Medical records, not validated.	All births		Pre-intervention: 4942 Post-intervention: 5273	168	3.4% (baseline)	Post-intervention: 17.4%	Provincial hospital serving as a referral hospital for all the maternity centers in the district (7661 km2 and 180,000 inhibitants in 1986). CS available.	2500	Oxytocin infusion was started at 2 mU/minute and was increased arithmetically every 30 minutes until contractions of clinically good intensity lasting 45 seconds occured with a frequency of three to four in 10 minutes.	Partograph	Doppler for IA No electronic FHR monitoring or scalp blood sampling.	
8	Delvaux	2007	July 2002 to May 2003	Côte d'Ivoire	Observational cross-sectional study	Quality of care	Direct observations	All vaginal births		229	41	18%		Four urban maternity wards: Three health centres performing normal deliveries and a secondary referral hospital also managing complicated deliveries. All facilities are publicly funded.	1400 - 3000	Oxytocin were mostly administered by intramuscular injections.	Partograph		Assessment of the FHR in 60% of deliveries. Contractions were monitored once in 9% of deliveries. The partograph was completed during labour in only 5% of deliveries, but filled after delivery in 48% of deliveries. In two of the sites, the partograph was completed after delivery in more than 60% and 95% of deliveries, respectively.
9	Khalil	2004	October 10th to November 6th 2001	Egypt	Observational cross-sectional study	Quality of care	Direct observations	All term births. Singleton, cephalic pregnancies. In active labour.	Complicated obstetric history in current or previous pregnancy.	188	171	91%		Influential obstetric teaching hospital in central Cairo.	20,000 Ratio: 1:8 4 women per bed	The facility used gravity-fed infusions. Oxytocin 5 IU was the most frequently administered dose for labor augmentation (82%). If cervical dilatation < 1 cm/h.		Pinard	Partographs were not available. Vaginal examination in 30% of women with augmentated labor. FHR monitored appropriately in 20% of women with augmentated labor.
10	Sharma	2017	October 2015 to July 2016	India	Observational cross-sectional study	To determine and compare the outcome of deliveries in low risk woman with timing of admission, either in active or latent phase of spontaneous labour, related to the rate of intervention and the rate of complications	Direct observations	Term. Singleton, cephalic pregnancies. Uncomplicated pregnancies. Spontaneous onset of labour and intact membranes on admission.	Prior caesarean delivery. Any medical or obstetric condition complicating pregnancy. Diagnosed fetal anomalies or death.	180	108	60%	Latent phase: 68.75% Active phase: 50.0%	Tertiary care hospital. CS available.	Not specified	If progress of labour was not satisfactory due to weak inefficient uterine contractions.	Partograph		
11	Lyengar	2009	June to August 2006 August to October 2006	India	Observational cross-sectional study	To assess key practices and costs relating to home- and institutional delivery care in rural Rajasthan, India.	Interviews with women. Identified by Traditional Birth Attendances, childcare workers, volunteers, and local resident women.	Vaginal births		Small clinics: 36 Health centres: 374 Hospitals: 222	35 347 206	Small clinics: 97% Health centres: 93% Hospitals: 93%	Small clinics: 97% IM inj. and 69% i.v. drip Health centres: 93% IM inj. and 86% i.v. drip Hospitals: 93% IM inj. and 85% i.v. drip	Institutional deliveries: Small rural clinics (2% of deliveries) as government subcentres (0.5% of deliveries) and private clinics (1.5% of deliveries), Community Health Centres (CHCs) (10% of deliveries), Primary Health Centres (PHCs) (9% of deliveries), Hospitals on district level (13% of deliveries) - either governmental (11% of deliveries) or private (2% of deliveries).	Community Health Centres: 3-6 nurses per 30 beds Primary Health Centres: 2-4 doctors/nurses per 6 beds	Intramuscular injections or intravenous drip.			
12	Souza	2018	December 2014 to November 2015	Nigeria and Uganda	Observational cross-sectional study	To assess the accuracy of the World Health Organization (WHO) partograph alert line and other candidate predictors in the identification of women at risk of developing severe	Medical records, not validated. Attending staff were approached to complement medical records data when needed.	All singleton births. GA > 34 weeks Spontaneous onset of labour presenting at cervical dilatation of ≤ 6 cm or undergoing induction of labour.	Elective CS.	9995	3498	35%		13 Hospitals with at least 1000 births. CS available.			Partograph	IA using doptone	Although the partograph was a standard element of medical records in all participating health facilities, its prospective application to guide labour management during the study period varied widely across the hospitals.
13	Lovold	2008	Ethiopia and Tanzania: October and December 2005 Benin, El Salvador, Honduras and Nicaragua: July and December	Benin, Ethiopia, Tanzania, El Salvador, Honduras and Nicaragua.	Observational cross-sectional study	To summarize current rates, trends, and risks associated with labor induction and augmentation with oxytocin and/or misoprostol in low-income countries.	Direct observations (AMTSL study) during two 8-hour periods (generally from 7.00 to 23.00) over 2 days in each facility.	All vaginal births.		Benin: 250 Ethiopia: 310 Tanzania: 249 El Salvador: 192 Honduras: 221 Nicaragua: 180	78 37 22 36 71 58	Benin = 31.9% Ethiopia = 11.9% Tanzania = 8.7% El Salvador 18.8% Honduras = 32.3% Nicaragua = 32.1%		Mostly public District level hospitals or higher hospitals (national referral hospitals or regional or provincial hospitals), although the 3 sub-Saharan African samples include Health centers. Furthermore, Benin and Tanzania included private health facilities. Benin = 26 facilities. Ethiopia = 23 facilities. Tanzania: 29 facilities. El Salvador = 25 facilities. Honduras = 15 facilities. Nicaragua = 28 facilities.	1-3 deliveries per day for all facilities.				
14	Sorensen	2010	July 7th to August 25th 2008 September 30th to November 17th 2008	Tanzania	Interventional one-armed pre-post study	Quality of care	Direct observations	All births with newborns weighing ≥ 1 kg.		Pre-intervention: 558 Post-intervention: 550	36	6.4% (baseline)	Post-intervention: 12.0%	Kagera Regional Referral Hospital. Urban. CS available.	4000		Partographs		Partograph not filled: 11.7% pre-intervention and 9.3% post-intervention. Partograph filled incomplete: 16.7% pre-intervention and 12.0% post-intervention. Partograph filled complete: 71.6% pre-intervention and 78.7% post-intervention. Regularly FHR monitoring (every 30 minutes) during active labor: 38.8 - 40.2% pre-intervention and 33.1 - 34.6% post-intervention (different values in text and table)

15	Maimbolwa	1997	July 1994 to January 1995	Zambia	Observational cross-sectional study	Quality of care	Direct observations	All term births. Singleton, cephalic pregnancies. Spontaumous onset of labour. Uncomplicated pregnancy. In active labour.		Lusaka University Teaching Hospital: 30 Lusaka urban health centres: 30 Southern province: 24	2 0 1	6.7% 0% 4.2%		11 maternity facilities in total (3 urban and 8 rural health facilities): Lusaka: 1 University Teaching Hospital (UTH) and 2 urban health centres (LUHC). Southern province (SP): 8 rural hospitals (5 government and 3 mission hospitals).	UTH: 30-40 deliveries per day. Urban health centres: 10 deliveries per day. Rural facilities: The number of deliveries varied from 5 to no deliveries per day.	5 IU oxytocin intravenous.	Partograph	Fetal stethoscope	Partograph use: All women at UTH, 50% of women at LUHC and 25% of women in SP. In SP the midwives used self-designed observation charts for 50% of the women. The partograph was not used effectively in any of the settings and were not available at all institutions studied. Routine performance of vaginal examinations was dictated by the availability of gloves. FHR: Fetal monitoring were not done regularly or not done at all. The women were left alone for long periods, often naked throughout the labour and were therefore cold. They were confined to bed, with poor supervision and no preparation for the delivery, and in some cases even no assistance by the midwife during delivery. One midwife in SP could not be at the bedside of the labouring woman, since she was assigned duties
16	Janna	2013	August to November 2007	Bangladesh	Observational cross-sectional study	To examine the birth outcome of women with timing of admission either in active or latent phase of spontaneous labour.	Direct observations	Not specified how women were selected. Term. Singleton, cephalic pregnancies. Spontamous onset of labour. Uncomplicated pregnancy. With intact membrane on admission. In active or latent phase of labour.	Prior caesarean delivey and antenatally diagnosed foetal anomalies or death.	60	36	60%	Active: 62.9% Latent: 56%	Tertiary hospital/University hospital. CS available.		If weak inefficient uterine contractions.	Partograph	IA	
17	Kalisa R	2019	January to December 2011	Rwanda	Observational cross-sectional study	To explore how often prolonged labour was adequately managed and compare labor progress and fetal outcomes of prolonged and uncomplicated labour using partograph in rural [illegible]	Medical records, not validated.	All births. GA > 37 Singleton, cephalic pregnancies. Spontamous onset of labour. Uncomplicated pregnancy. Cervical dilatation at ≥ 4cm	Preterm labour, eclampsia, antepartum haemorage, multiple pregnancies or intrauterine fetal death.	7605	2700	35.5%		One provincial referral hospital for women with high risk pregnancies and complications. Two district hospitals.	1500 3200 2600		Partograph		
18	Penumadu KM	2014	October 2012 to September 2014	India	Observational cross-sectional study	To analyze patterns of labour amongst spontaneous parturients using WHO modified partogram and compare outcomes of labour and neonatal outcomes amongst [illegible]	Medical records or observations.	Consecutive births. GA > 37 weeks Singleton, cephalic pregnancies. Spontamous onset of labour. Uncomplicated pregnancy. Good obstetric history.	Medical complications such as: Severe pregnancy induced hypertension, severe anemia, uncontrolled diabetes. Obstetric complications such as: Major degrees of cephalopelvic disproportions, contracted pelvis, malpresentation, post caecarean pregnancy, multiple pregnancy, preterm labour, antepartum haemorage, intra [illegible]	250	105	42.8%		Rural hospital.			Partograph		
19	Shah N	2016	August 2012 to July 2013	India	Observational cross-sectional study	To compare the course of labour and its outcome in primigravidae and multigravidae	Medical records, not validated.	Consecutive births. GA > 37 weeks. Singleton, cephalic pregnancies. Spontamous onset of labour. Uncomplicated pregnancy. Cervical dilatation of ≥ 4 cm.	Previous uterine surgery, cephalopelvic disproportions, associated complications like pre-eclamplsia, eclampsia, anaemia, prematur rupture of membranes, antepartum haemorrage, medical illness.	147	78	53.1%	Primigravida: 43.68% Multigravida: 16.6%	SSG (acroiyme not explained) hospital in Baroda India. CS available.		When the alert line is crossed or at 6 hours after admission if the uterine contractions where inadequate.	Partograph		
20	Singh S	2018	June 2010 to April 2011	India	Observational cross-sectional study	Quality of care	Direct observations	Consecutive births. GA > 34 weeks Singleton, cephalic pregnancies. Uncomplicated pregnancy. Cervical dilatation of ≥ 4 cm.	Women who were shifted out of labour room due to referral to a higher centre for CS or for any other reason and whose observation could not be completed.	Medical Colleges (MC): 368 District Hospital (DH): 378 First Referral Unit (FRU): 489 Peripheral Health Centres (PHC): 244	282 108 201 104 Total: 666	MC: 76.6% DH: 28% FRU: 41.1% PHC: 42.6% Total: 45%	MC: 71% IM inj. 77% i.v. drip DH: 28% IM inj. 23% i.v. drip FRU: 41% IM inj, 37% i.v. drip PHC: 39% IM inj. and 43% i.v. drip	5 medical colleges, 5 district hospitals and one urban sub-district hospital. Rural areas included 20 first referral units or community health centres and 24 rural public health centres.	Community health centres: >500. Primary health centres: >200.		Partograph		Plotting of the partograph was done for only 15,8% of deliveries observed.
21	Van Roosmalen	1992	Lugarawa Hospital: January 1978 to May 1979 Mbozi Hospital: June 1980 to May 1982	Tanzania	Observational cross-sectional study	To assess the relation between maternal height and the outcome of labour independent of parity and weight of the newborn.	Medical records, not validated.	Consecutive births. Singleton, cephalic pregnancies. Newborns ≥ 2 kg.	CS for other reason than cephalopelvic disproportion.	Lugarawa: 1095 Mbozi: 3869	61 147	Lugarawa: 5.5% Mbozi: 3.8%	Lugarawa: Primigravida: 18.8% Multigravida: 1.5% Mbozi: Primigravida: 6.7% Primigravida: 2.9%	Lugarawa rural mission Hospital in South western highland of Tanzania. Mbozi hospital, a rural district hospital in south western highland of Tanzania. CS available.	Lugarawa: 1203 (1 years and 4 months) = 902. Mbozi: 4229 (3 years) = 1409.		Partograph		
22	Rana	2003	November 3rd 1997 to February 13th 1998	Nepal	Observational cross-sectional study	To compare the efficacy of Nepal's first independent midwifery-led unit with an adjacent Consultant-led Maternity Unit (CMU).	Medical records, not validated.	Consecutive births which were low risk on admission.		Midwifery-led: 550 Physician-led: 438	66 205	Midwifery-led: 12% Phycisan-led: 47%		The Patan Hospital Birthing Centre. The Birthing Centre (BC) – attached to a district hospital – is the first independent nurse midwifery unit in Nepal. The standard care is the Consultant-Led Maternity Unit (CMU). CS available.	5000 BC = 1300 CMU = 3700		Partograph	IA	
23	Stanton	2014	Karnataka: September 5th to October 19th 2011 Uttar Pradesh: August 4th to November 7th	India	Observational cross-sectional study	To describe intrapartum uterotonic drug use and related behaviors in public health facility-based deliveries and to describe drug storage conditions in	Direct observations during day time only (8 - 23).	Consecutive vaginal births. Women > 18 years old. Cervical dilatation of ≤ 6 cm.		Hassan Hospital: 97 Bagalkot: 89 Agra Hospital: 91 Gorakhpur: 89	61 54 51 75	Hassan Hospital: 79.6% Bagalkot: 75.5% Agra Hospital: 88.2% Gorakhpur: 91.9%		Primary Health centers: 116 Comprehensive health center: 72 Subdistrict hospital: 86 District hospital: 92					
24	Ijaiya	2011	May 15th to June 14th 2004	Nigeria	Obervational cross-sectional study	To determine and compare the average duration of labor of spontaneous onset between nulliparas and multiparas and to determine factors affecting duration of [illegible]	Medical records or direct observations.	Consecutive term births. Cephalic pregnancies. Spontamous onset of labour.	Pre-labor rupture of fetal membranes, fetal death at presentation and instrumental and abnormal deliveries.	238	53	22.3%		University of Ilorin Teaching Hospital. CS available.		Augmentation of labor was done by addition of 10 IU of oxytocin into 1 L of intravenous infusion and titrated against uterine contractions until adequate uterine contractions were achieved.	Partograph	Pinnard	
25	Maaloe	2018	October 1st 2014 to January 31st 2015	Tanzania (Zanzibar)	Iinterventional one-armed pre-post study	To evaluate effect of locally tailored labour management guidelines (PartoMa guidelines) on intrahospital stillbirths and [illegible]	Medical records, not validated. Missing info ranged from 1% (maternal age and progress on admission) to 14% (ANC and HIV status).	All births with newborn weighing > 1 kg.	Sub-analyses excluded absence of FHR on admission. Multiple pregnancies.	283	63	22% (baseline)	Post-intervention: 12%	Public low esource referral hospital. CS available.	12,000 Ratio: 1 staff:4-6 women	When crossing the action line.	Partograph	IA	> 90% of women reaching active labour and admitted before second stage had a partograph started, and > 90% of these had first cervical dilation appropriately plotted on the alert line. 233/283 (82%) had at least one FHR recorded.
26	Hassan-Bitar	2007	April 2005 to March 2006	West Bank, Occupied Palestinian Territory	Observational cross-sectional study	Quality of care	Direct observations	Not specified		64	22	34%		General referral public hospital located in the middle governorate of the West Bank. CS available.	4000		Partograph		National guidelines and partograph seem to exist but not adhered to.
27	Bood	1990	July 1987 to July 1988	Nicaragua	Observational cross-sectional study	To support the proposition that active management of labour is safe and feasible in the setting of a rural hospital in Nicaragua.	Direct observations under the care of one specific doctor.	Nulliparous women. GA > 37 weeks. Singleton cephalic pregnancies admitted in labour.	Fetal distress.	67	12	18%		Pedro Altamirano Hospital of La Trinidad. 72 bed hospital in rural northern Nicaragua serves approx 20,000 people of very low income. CS available.		10IU/litre, started at 4 drops/minut, increasing by 4 drops every 30mins until patient had no more than seven contractions in 15mins or was shown by subsequent pelvic exam to have adequate progression. Cervical dilatation < 1cm/hr.		IA	
28	Van Roosmalen	1989	September 1971 to January 1977 January 1977 to May 1979	Tanzania	Observational cross-sectional study	To assess the influence of maternal height on obstetrical outcome.	Medical records, not validated.	All births		3054 1929	21 89	0.7% 4.6%		Lugarawa rural mission Hospital in South western highland of Tanzania. CS available.		When crossing the action line.	Partograph	IA	
29	Obel	2021	August 2017 November 2017	Yemen	Iinterventional one-armed pre-post study	Quality of care	Medical records, not validated. Data double entered.	Randomly selected vaginal births. GA > 28 weeks. Spontamous onset of labour.		220 193	50 50	23% 26%		Taiz Houbane Maternal and Child Health (MCH) Hospital run by medicins sans frontiers	12,408 5232		Partograph	IA	

30	Munan	2017	December 2013 to May 2014	Democratic Republic of Congo	Observational cross-sectional study	To compare multiparous and primiparous births.	Collected by staff facilitating childborths. Medical records, not validated.	Singleton births		1854	508	27.4%	Primigravida: 37.7% Multigravida (2 or more): 22.9%	10 referral maternity hospitals					
31	Azandegbé	2004	October 1st to December 31st 1998	Benin	Observational cross-sectional study	Evaluation of the partograph	Medical records, not validated.	All births. Cervical dilatation < 8 cm No complications requiring obstetrical intervention.	Partographs not used	898	186	20.7%	Left of the alert line: 16% Between alert and action line: 46.4% Action line crossed: 1 delivery crossed the action line	11 maternity wards in urban areas and 31 in rural areas			Partograph		Administrative data was fully recorded in less than one file out of five and in nearly half of the cases, only two data out of four were provided. 19.6% of the data concerning the dilation was not filled. Less than half of the partographs were correctly filled out.