LAMPIRAN

1. SOAP dan Catatan Perkembangan

PRODI PENDIDIKAN PROFESI BIDAN
JURUSAN KEBIDANAN POLTEKKES KEMENKES YOGYAKARTA
Jalan Mangkuyudan MJ III/304 Yogyakarta 55143 Telp (0274) 374331

ASUHAN KEBIDANAN KEHAMILAN PADA NY.L UMUR 22 Tahun G2P1A0
UK 33 MINGGU DENGAN FAKTOR RISIKO KEKURANGAN ENERGO
KRONIK (KEK) DI PUSKESMAS SUNGAI SELAN
BANGKA TENGAH

Hari, Tanggal : Jumat, 12 Januari 2024

Pukul   : 10.00 WIB

No.RM   : 00216XX

SUBJEKTIF (S)

1. Identitas

		Istri	**Suami**
Nama	:	Ny.L	Tn. A
Umur	:	22 Tahun	25 tahun
Agama	:	Islam	Islam
Pendidikan	:	SMA	SMA
Pekerjaan	:	Swasta	Swasta
Alamat	:	Desa Selan Bangka Tengah	

2. Data Subjektif

   a. Keluhan Utama

   Ny.L mengatakan ingin periksa hamil, ibu mengatakan tidak ada keluhan. Hanya saja sekarang semakin sering BAK dimalam hari sehingga mengganggu waktu tidur.

   b. Riwayat Menstruasi

   Usia *Menarche* ±14 tahun, lama ±7 hari, siklus ±28 hari, teratur, tidak ada keputihan, tidak mengalami dismenore. Ganti pembalut 3-4x/ hari.

   HPHT: 26 Mei 2023 dan HPL tanggal 05 Maret 2024

c. Riwayat menikah

Menikah 1x pada Januari 2019. Umur pertama kali menikah 18 tahun, dengan suami sekarang sudah ± 5 tahun. Status TT: TT5.

d. Riwayat Obstetri

1. 2020/ perempuan/3000 gr/ spontan/ sehat
2. Hamil ini

e. Riwayat Kontrasepsi

Ny.L mengatakan sebelumnya pernah menggunakan alat kontrasepsi jenis pil.

f. Riwayat Kesehatan Sekarang

Ny.L mengatakan saat ini tidak sedang menderita batuk atau pilek, pusing, demam tinggi, diare dan penyakit seperti asma, TBC, hipertensi, diabetes mellitus, jantung, hepatitis B dan HIV, dll.

g. Riwayat Kesehatan Keluarga

Ny.L mengatakan saat ini keluarganya tidak ada yang menderita batuk atau pilek, pusing, demam tinggi, diare, dan tidak ada riwayat penyakit asma, TBC, hipertensi, diabetes mellitus, jantung, hepatitis B dan HIV, dll.

h. Pola *Personal Hygiene*

Ny.L mengatakan mandi 2 kali sehari, membersihkan daerah genetalia setelah BAB, BAK dan saat mandi. Mengganti celana dalam setiap habis mandi dan apabila dirasa lembab.

i. Pola Pemenuhan Nutrisi

	Makan	Minum
Frekuensi	3-4x/hari	±10x/ hari
Porsi	sedang	gelas kecil
Macam	nasi, lauk,sayur (kadang)	air putih, teh (kadang)
Keluhan	Ibu kurang suka makan sayur-sayuran dan buahan	tidak ada keluhan

j. Pola Eliminasi

	BAB	BAK
Frekuensi	1-2 hari sekali	5-6x/hari

Tekstur	Lunak	cair
Warna	Kecoklatan	kuning jernih
Keluhan	tidak ada keluhan	tidak ada keluhan

k. Pola Aktivitas, Istirahat, dan Kebiasaan

- Ny.L mengatakan aktivitas sehari-hari yaitu bekerja sebagai penjahit dan melakukan pekerjaan rumah seperti mencuci, memasak, membersihkan rumah, menjaga anak dll.
- Ny.L mengatakan pada siang hari jarang tidur, dan pada malam hari tidur selama ±7 jam akan tetapi akhir-akhir ini sulit untuk tidur dengan nyenyak karena sudah mulai tidak enak.
- Ny.L mengatakan pola seksualitasnya 1-2x per minggu saat sebelum hamil dan jarang melakukan hubungan seksual saat hamil ini karena takut.
- Ny.L jarang sekali melakukan olahraga
- Ny.L mengatakan tidak ada kebiasaan merokok, minum minuman keras, jamu-jamuan, zat adiktif, dll.

OBJEKTIF (O)

1. Keadaan Umum   : Baik
2. Kesadaran   : *Composmentis*
3. Tanda-Tanda Vital :
    a. TD   : 105/69 mmHg
    b. N   : 80x/ menit
    c. R   : 22x/ menit
    d. S   : 36,5ºC
4. Pemeriksaan Antropometri
    a. BB   : sebelum hamil 40 kg, BB sekarang 45 kg
    b. TB   : 155 cm
    c. Lila : 23,0 cm

d. IMT : 18,7kg/m^2

5. Pemeriksaan Fisik

    a. Kepala   : tidak ada oedema, terdapat hiperpigmentasi di sekitar pipi

    b. Mata   : Konjungtiva merah muda, sklera putih

    c. Perut   : membesar memanjang, terdapat hiperpigmentasi dan striae alba

        Leopold I   : TFU pertengahan px-pusat. Teraba bulat, lunak, tidak melenting. Kesimpulan : bokong janin

        Leopold II   : Kanan: teraba datar, tahanan kuat. Kesimpulan: punggung janin. Kiri: teraba bulat kecil-kecil berbenjol. Kesimpulan: ekstremitas

        Leopold III   : Teraba bulat, keras, tidak melenting. Kesimpulan: kepala janin

        Leopold IV   : Posisi tangan pemeriksa divergen/ tidak bertemu. Kesimpulan: bagian terendah janin sudah masuk panggul Mc Donald : 23 cm

        TBJ   : 1705 gram

        DJJ   : 133x/mnt

    d. Ekstremitas : gerak aktif, tidak terdapat oedema

6. Pemeriksaan laboratorium (TM 3: 12-01-2024)

    a. Hb : 11,0 gr/dL   HIV/AIDS   : Negatif

    b. GDS : 85 mg/dL   Gol. Darah   : O

    c. Sypilis : Negatif   Hepatitis   : Negatif

    d. Protein urine: Negatif

ANALISIS (A)

1. Diagnosis

Ny.L usia 22 Tahun G2P1Ab0Ah1 hamil umur kehamilan 33 minggu dengan kehamilan Kurang Energi Kronis (KEK)

2. Masalah

Kurangnya pengetahuan ibu tentang kebutuhan gizi ibu hamil

Sulit tidur dimalam hari

3. Kebutuhan

KIE mengenai cara penanganan KEK dan KIE tentang kebutuhan gizi ibu hamil dan KIE cara mengatasi keluhan sulit tidur dimalam hari

4. Diagnosis potensial

BBLR

5. Antisipasi tindakan segera

Tidak ada

PENATALAKSANAAN (P)

1. Menjelaskan maksud dan tujuan kunjungan kepada keluarga/ibu yaitu untuk melakukan penyuluhan sesuai dengan kondisi Ibu saat ini yaitu hamil dengan Kurang Energi Kronis (KEK). Ibu mengerti maksud dan tujuan kunjungan yang dilakukan.

2. Memberikan inform consent kepada Ibu untuk meminta persetujuan menjadi responden asuhan kebidanan keluarga yang akan dilakukan pendampingan. Ibu telah membaca dan menyetujui inform consent yang diberikan serta bersedia menjadi responden.

3. Memberitahu kepada ibu hasil pemeriksaan keadaan umum dan tanda vital ibu seperti tensi dan suhu dalam batas normal, tetapi status gizi ibu termasuk dalam kategori kurang karena keadaan lingkar lengan atas ibu dibawah batas nilai normal yaitu 23,5 cm. Ibu mengerti tentang kondisinya saat ini.

4. Memberikan KIE penyebab dan cara mengatasi keluhan sering BAK. saat trimester ketiga, posisi rahim yang kian membesar membuat kandung kemih lebih tertekan, hormon progesteron juga meningkat drastis. Akibatnya berpengaruh pada frekuensi buang air kecil yang semakin sering. Menjelang hari persalinan tiba, umumnya gerakan-gerakan bayi juga berpengaruh pada frekuensi ingin buang air kecil. Cara mengatasi keluhan tersebut jangan mengirangi konsumsi minum tetapi tetap penuhu kebutuhan cairan yang cukup, istirahat yang cukup, hindari kafein, lakukan senam hamil dan jaga kebersihan vagina untuk menghindari ISK/keputihan. Ibu mendengarkan dan menyimak penyuluhan yang diberikan.

5. Memberikan penyuluhan dan KIE mengenai Kurang Energi Kronis (KEK) pada ibu hamil dengan media leaflet. Memberikan KIE risiko kehamilan dengan KEK yaitu terjadi perdarahan, anemia, pengaruh waktu persalinan yaitu persalinan sulit dan lama, persalinan sebelum waktunya, perdarahan setelah persalinan, dan pengaruh pada janin yaitu keguguran, bayi lahir mati, cacat bawaan, bayi dengan berat badan lahir rendah. Ibu mendengarkan dan menyimak penyuluhan yang diberikan.

6. Memberikan penyuluhan tentang kebutuhan gizi ibu hamil. Pada trimester III kebutuhan ibu hamil akan semakin besar yang diperlukan untuk pertumbuhan janin dan plasenta, olehnya itu, ibu hamil perlu mengubah cara makannya, meskipun ibu hamil sudah merasa makan dengan baik, jika melakukan diet, maka diet makanan pun harus mengikuti diet makanan untuk ibu hamil, saat kehamilan, ibu hamil membutuhkan lebih banyak konsumsi protein, kalori (untuk energi), vitamin dan mineral untuk perkembangan bayi dan ibu hamil. Ibu mendengarkan dan menyimak penyuluhan yang diberikan dan berjanji akan menambah konsumsi makanan yg bergizi seimbang.

7. Melakukan evaluasi penyuluhan. Ibu mampu menjelaskan ulang KIE yang diberikan.

8. Menjadwalkan kunjungan ulang ibu 1 bulan lagi , ibu bersedia

9. Mendokumentasikan asuhan yang diberikan pada laporan asuhan keluarga binaan. Dokumentasi telah dilakukan.

CATATAN PERKEMBANGAN KEHAMILAN
ASUHAN KEBIDANAN NY.L UMUR 22 Tahun G2P1A0 UK 36 MINGGU
2 HARI DI PUSKESMAS SUNGAI SELAN BANGKA TENGAH

TANGGAL/JAM   : 05 Februari 2024/ Pukul 11.00 WIB
Tempat   : Rumah Pasien

S	Ibu mengatakan bahwa sering merasakan nyeri perut bagian bawah dan nyeri punggung.
O	Keadaan umum: baik Kesadaran: composmentis TD: 126/84 mmHg, N: 81x/menit, R: 22x/menit, S: 36,6°C, TB 155, BB: 48 kg,LILA 23,5 cm, IMT 20,0 kg/m2
A	Ny.L usia 22 Tahun G2P1Ab0Ah1 hamil umur kehamilan 36 minggu 3 Hari dengan kehamilan Kurang Energi Kronis (KEK)
P	1. Menjelasakn kepada ibu tentang hasil pemeriksaan ada peningkatan LILA namun tetap memotifasi ibu untuk terus meningkatkan konsumsi protein nabati dan hewani seperti tahu telur dan tempe selain mudah didapat namun juga harganya terjangkau. *Evaluasi : Ibu mengerti dengan penjelasan yang diberikan* 2. KIE tentang cara mengatasi ketidak nyamanan TM 3 yaitu nyeri punggung adalah dengan cara hindari sikap membungkuk saat mengangkat beban sebaiknya tekuk lutuk terlebih dahulu sebelum mengangkat beban, tidak menggunakan sepatu hak tinggi dan melakukan senam hamil. *Evaluasi : Ibu mengerti dengan penjelasan yang diberikan dan bersedia mengikuti anjuran yang diberikan* 3. KIE tentang tanda bahaya trimester III dan tanda – tanda persalinan *Evaluasi : Ibu mengerti dengan penjelasan yang diberikan* 4. Menyarankan ibu untuk tetap memantau gerak janin minimal 10 kali Gerakan dalam 12 jam. *Evaluasi : Ibu mengerti dengan penjelasan yang diberikan* 5. Menyarankan ibu untuk kunjungan ulang 2 minggu lagi di Puskesmas *Evaluasi : Ibu mengerti dan bersedia melakukan kunjungan ulang* 6. Melakukan dokumentasi tindakan. Tindakan telah didokumentasikan

ASUHAN KEBIDANAN PERSALINAN PADA NY.L UMUR 22 Tahun G2P1A0 UK 38 MINGGU 4 HARI DENGAN PERSALINAN SPONTAN NORMAL DI PUSKESMAS SUNGAI SELAN BANGKA TENGAH

Tanggal   : 20 Februari 2024/ Pukul 16.50 WIB

Tempat   : Puskesmas Sungai Selan Bangka Tengah

S (SUBJEKTIF)

1. Identitas

		Istri	**Suami**
Nama	:	Ny.L	Tn. A
Umur	:	22 Tahun	25 tahun
Agama	:	Islam	Islam
Pendidikan	:	SMA	SMA
Pekerjaan	:	Swasta	Swasta
Alamat	:	Desa Selan Bangka Tengah	

2. Data Subjektif

Ibu mengatakan kenceng-kenceng teratur dan keluar lendir darah sejak tadi pukul 10.00. Saat ini umur kehamilan 38 minggu 3 hari.

Makan terakhir pukul 12.00 WIB tapi hanya sedikit. Terakhir minum pukul 12.30 WIB.

BAB terakhir tadi pagi pukul 06.00 dan BAK terakhir sebelum berangkat kesini sekitar pukul 15.00 WIB.

O (OBJEKTIF)

KU	: Baik	Kesadaran	: Compos Mentis
TD	: 110/70 mmHg	Nadi	: 78x/menit
RR	: 20x/menit	Suhu	: 36,6ºC

Pemeriksaan Fisik

Kepala   : rambut hitam, lurus, dan bersih

Muka   : tidak pucat, tidak odeme

Mata   : Simetris, konjungtiva merah muda

Hidung	: bersih tidak ada sumbatan
Telinga	: simetris, tidak ada serumen
Leher	: tidak ada pembengkakan pada kelenjar tiroid dan kelenjar limfe
Payudara	: tidak ada benjolan abnormal
Paru-paru	: tidak ada stridor, weezhing dan tarikan dinding dada kedalam.
Abdomen	:

Leopold I : TFU 35 cm. Teraba lunak, bulat, tidak melenting (bokong janin)

Leopold II : sebelah kanan teraba bagian kecil berbenjol-benjol (bagian kecil janin), sebelah kiri teraba datar, keras, memanjang (punggung janin)

Leopold III: teraba bulat, keras, melenting (kepala janin) presentasi kepala

Leopold IV : tangan pemeriksa tidak bertemu (divergen)

- His : 3-4 kali / 10'/ 30"
- TBJ : (35-11) x 155= 3.655 gram,
- DJJ : 146 x/menit, teratur, punctum maksimum di perut bagian kiri dibawah pusat. Ibu dalam keadaan rileks saat pemeriksaan.

Ekstermitas	: tidak ada oedema dan tidak ada varices.
Genetalia	: Pemeriksaan Dalam : vulva uretra tenang, portio tipis, pembukaan 8 cm, kepala hodge 2, selket (+), STLD (+).

Pemeriksaan Penunjang Swab antigen : negatif

A (ANALISIS)

Ny.L usia 22 Tahun G2P1Ab0Ah1 Umur Kehamilan 38 minggu 3 hari dalam persalinan kala 1 fase aktif.

P (PENATALAKSANAAN)

1. Selama memberikan pelayanan kepada ibu, bidan selalu memakai APD lengkap. Ibu hanya boleh didampingi oleh 1 orang dan harus bermasker. Bidan dan pendamping ibu sudah sesuai dengan protokol kesehatan.

2. Memberitahu ibu bahwa berdasarkan hasil pemeriksaan keadaan ibu dan janin baik dan sehat. Ibu mengerti.

3. Menganjurkan ibu untuk melakukan relaksasai dengan mengatur pernafasan untuk mengurangi nyeri kontraksi. Ibu mengerti

4. Memberitahu ibu untuk mengejan terlebih saat ada kontraksi, dan. Ibu mengerti.

5. Memberitahu ibu untuk minum disela-sela kontraksi agar memiliki tenaga saat mengejan. Ibu mengerti

6. Memberikan motivasi kepada ibu untuk tetap kuat dan semangat menghadapi persalinan dan mempersilahkan salah satu keluarga untuk mendampingi ibu bersalin. Suami mendampingi selama proses persalinan.

CATATAM PERKEMBANGAN PERSALINAN

Tanggal,jam	Data Subjektif	Data Objektif	Analisis	Penatalaksanaan
20-02-24/17.00	Ibu mengatakan ketuban pecah dan merasa ingin BAB	TD : 110/70 S : 36,5 R : 20 N : 80 VT : v/u tenang, portio tidak teraba, pembukaan lengkap, kepala hodge III, selket (-), STLD (+) HIS : 5x	Ny.L usia 22 Tahun G2P1A0 UK 38+3 minggu inpartu kala 2 normal	Melakukan pertolongan persalinan sesuai APN Bayi lahir spontan pukul 18.30 mengangis kuat, warna kulit kemerahan, tonus otot kuat, jenis kelamin laki-laki. Dilakukan IMD selama 1 Jam berhasil
Jam 18.30	Ibu mengatakan senang dengan kelahiran bayinya	TD : 110/70 N : 80 R : 20 S: 36,5 Janin tunggal	Ny.L usia 22 Tahun P2Ab0 inpartu kala III normal	Menyuntikkan oxcytocin, melakukan Manajemen aktif kala III. Plasenta lahir lengkap pukul 18.35 WIB Memeriksa jalan lahir terdapat robekan jalan lahir derajat 2 dan dilakukan heacting perenium sebanyak 15x
Jam 18.40	Ibu mengatakan perutnya mulas	TD : 100/70 N : 80 S : 36 R : 20 Perineum utuh, kontraksi keras	Ny.L usia 22 Tahun P2Ab0 inpartu kala IV normal	Membantu merapikan ibu Membereskan alat Mengobservasi tanda tanda vital ibu dan tanda bahaya nifas

Lembar Partograf

ASUHAN KEBIDANAN PADA BAYI NY.L USIA 0 JAM CUKUP BULAN SESUAI MASA KEHAMILAN

Tanggal Pengkajian/ Jam: 20 Februari 2024 / 18.30

S (SUBJEKTIF)

1. Identitas Bayi

   Nama   : Bayi Ny.L

   Tanggal lahir : 20-02-2024 jam 18.30 WIB. Usia   : 0 jam

   Jenis kelamin : Laki-laki

2. Identitas Orangtua

		Istri	**Suami**
Nama	:	Ny.L	Tn. A
Umur	:	22 Tahun	25 tahun
Agama	:	Islam	Islam
Pendidikan	:	SMA	SMA
Pekerjaan	:	Swasta	Swasta
Alamat	:	Desa Selan Bangka Tengah	

3. Riwayat Antenatal

   a. G2P1Ab0Ah1 Umur Kehamilan 38+3 minggu

   b. Riwayat ANC   : teratur, 9 kali, di puskesmas, PMB

   c. Keluhan saat hamil   : mual dan muntah, sering BAK, nyeri
       punggung

   d. Penyakit selama hamil : tidak ada penyakit selama hamil

   e. Kebiasaan makan   : Ibu dan keluarganya mengatakan makan 2
       3x sehari, jenis: nasi, sayur lauk dan buah
       (jarang)

   f. Obat/ Jamu   : Ibu dan keluarganya mengatakan tidak
       pernah minum jamu/obat

   g. Merokok   : Ibu dan keluarganya mengatakan tidak
       pernah merokok

4. Riwayat Intranatal

    a. Lahir tanggal   : 20 Februari 2024 pukul 18.30

    b. Jenis persalinan   : Spontan

    c. Penolong   : Bidan

    d. Ibu dan bayi tidak ada komplikasi

5. Keadaan bayi baru lahir

    a. BB/PB lahir   : 2.750 gram/48 cm

    b. Nilai APGAR   : 7/9/10

    c. Jenis kelamin   : laki-laki

    d. caput succedenum : Tidak ada

    e. cephal hematom   : Tidak ada

    f. cacat bawaan   : Tidak ada

O (OBJEKTIF)

1. KU   : baik

   Kesadaran   : Compos Mentis

2. Pemeriksaan Umum :

    a. Pernapasan   : 40x/menit

    b. Denyut jantung   : 120x/menit

    c. Tonus otot dan gerakan : aktif

    d. Menangis   : spontan

    e. Warna kulit   : kemerahan

3. Antropometri :

   BB : 2.750 gram   PB : 48 cm

   LK : 32 cm   LD : 31,5 cm

4. Pemeriksaan fisik bayi

   Kepala   : tidak ada chepal haematom, tidak ada caput succsedanum

   Muk   : simetris, tidak ada tanda-tanda down syndrome

   Mata   : simetris, sclera putih, tidak ada kelainan

   Hidung   : tidak ada kelainan

   Telinga   : simetris, tidak ada kelainan

Mulut	: bibir merah, tidak ada labiapalatokisis	
Abdoemen	: tali pusat tidak ada tanda-tanda infeksi	
Genetalia	: skrotum 2, testis tampak turun dan tidak ada kelainan	
Ekstermitas	: simetris, gerakan aktif, jumlah jari : 5/5	
Tulang belakang	: normal, tidak ada spina bifida	
Anus	: berlubang, tidak ada kelainan	

Reflek :

Reflek rooting : (+)	Reflek sucking: (+)
Reflek Moro : (+)	Reflek babynski : (+)
Redlek graps : (+)	Reflek tonic neck : (+)

A (ANALISIS)

By.Ny.L usia 0 jam lahir spontan, cukup bulan sesuai masa kehamilan, normal.

P (PENATALAKSANAAN)

1. Memberitahu ibu atau keluarga bahwa keadaan bayi baik.
2. Mengeringkan bayi serta mengganti dengan kain kering dan memakaikan topi untuk mencegah hipotermi pada bayi. Melakukan IMD selama kurang lebih 1 jam
3. Melakukan Observasi keadaan umum bayi.
4. Memberikan salep mata tetrasiklin 1% pada kedua mata bayi
5. Memberikan injeksi Vitamin K 1 mg pada paha kiri secara IM.
6. Memberikan imunisasi Hb 0 pada paha kanan secara IM 1 jam setelah injeksi vitamin K
7. Memberitahu ibu untuk tetap menjaga kehangatan bayinya yaitu dengan cara memakaikan topi, selimut, serta segera mengganti popok yang sudah basah. Ibu bersedia menjaga kehangatan bayinya
8. Memberitahu ibu untuk menyusui bayinya sesering mungkin minimal 2 jam sekali, atau semau bayi dan juga melakukan ASI ekslusif selama 6 bulan. Ibu bersedia menyusui bayinya sesering mungkin dan ASI ekslusif

9. Menyampaikan cara perawatan tali pusat. Ibu merespon dengan baik, ibu mengatakan sudah diajarkan oleh bidan rumah sakit serta diajarkan cara memandikan bayi

10. Memberitahu ibu tanda bahaya yang dapat terjadi pada bayi yaitu bayi tidak mau menyusu, bayi terlihat kuning, demam tinggi, tidak sadar, dan memuntahkan ASI yang diberikan. Apabila mengalami hal tersebut sebaiknya ibu segera memberitahu bidan untuk mendapatkan pertolongan segera. Ibu mengerti tanda bahaya yang dapat terjadi pada bayi

11. Melanjutkan observasi keadaan umum bayi.
12. Melakukan dokumentasi asuhan kebidanan

ASUHAN KEBIDANAN PADA NEONATUS

By. Ny.L umur 0 hari (12 Jam) normal

Pengkajian Tanggal, Jam   : 21-02-2024/ 08.50 WIB (KN 1)

*(Pengkajian berdasarkan anamnesa dan pemeriksaan langsung)

S	Nama : By. Ny.L		
	TTL : 21-02-2024 bayi lahir jam 07.30 WIB		
	Umur : 1 hari		
	Jenis Kelamin: laki-laki		
	Riwayat Persalinan: 20-02-2024 bayi lahir jam 18.30 WIB, segera menangis, menangis kuat, warna kulit kemerahan, tonus otot aktif, Apgar Score 7/8/10, Jenis kelamin laki-laki berat badan bayi Ny.L sebesar 2750 gram, panjang badan 48 cm, LK 33 cm, LD 32 cm, lila 10 cm.		
	Bayi mau menyusu, sudah BAK 3kali, dan BAB 2 kali		
	a. KU: baik		d. Warna kulit: kemerahan
	b. Kesadaran:		e. Apgar scoe 7/8/10
	Composmentis		*dikaji berdasarkan anamnesa dan catatan buku KIA hasil pemeriksaan di puskesmas
	c. BB: 2750gram		
O	Tidak dilakukan		
A	By. Ny.L umur 12 Jam normal membutuhkan asuhan neonatus 6-48 jam.		
P	1. Memberitahu ibu bahwa dengan kondisi yang disampaikan ibu keadaan bayinya sehat, dengan BB: 2750 gram dan hasil pemeriksaan fisik dan antropometri dalam batas normal. Ibu mengetahui dan mengerti 2. Memberitahu ibu untuk tetap menjaga kehangatan bayinya yaitu dengan cara memakaikan topi, selimut, serta segera mengganti popok yang sudah basah. Ibu bersedia menjaga kehangatan bayinya 3. Memberitahu ibu untuk menyusui bayinya sesering mungkin minimal 2 jam sekali, atau semau bayi dan juga melakukan ASI ekslusif selama 6 bulan. Ibu bersedia menyusui bayinya sesering mungkin dan ASI ekslusif 4. Menyampaikan cara perawatan tali pusat. Ibu merespon dengan baik, ibu mengatakan sudah diajarkan oleh bidan rumah sakit serta diajarkan cara memandikan bayi 5. Memberitahu ibu tanda bahaya yang dapat terjadi pada bayi yaitu bayi tidak mau menyusu, bayi terlihat kuning, demam tinggi, tidak sadar, dan memuntahkan ASI yang diberikan. Apabila mengalami hal tersebut sebaiknya ibu segera memberitahu bidan untuk mendapatkan pertolongan segera. Ibu mengerti tanda bahaya yang dapat terjadi pada bayi 6. Menganjurkan ibu untuk kontrol ulang sesuai dengan jadwal yang telah ditentukan.		

		Ibu bersedia
	7.	Melanjutkan observasi dan melakukan dokumentasi tindakan
		Tindakan telah didokumentasikan

ASUHAN KEBIDANAN PADA NEONATUS

By. Ny.L umur 7 hari normal

Pengkajian Tanggal, Jam   : 24-02-2024/ 14.30 WIB (KN 2)
Media   : *WhatsApp*

*(Pengkajian berdasarkan anamnesa dan dokumentasi pemeriksaan di buku KIA)

S	Ibu mengatakan tidak ada keluhan, bayinya sehat, menyusu dengan baik.
	a. KU: baik b. Kesadaran: *Composmentis* c. BB : 2.800 gram d. Tali pusat : sudah lepas e. Warna kulit tidak kuning *dikaji berdasarkan anamnesa dan catatan buku KIA hasil pemeriksaan di puskesmas
O	Tidak dilakukan
A	By. Ny.L umur 4 hari normal membutuhkan asuhan neonatus 3-7 hari
P	1. Memberikan pujian dan support kepada ibu. Memberitahu ibu bahwa dengan kondisi yang disampaikan ibu keadaan bayinya sehat, dengan BB: 3.200 gram dan hasil pemeriksaan fisik dalam batas normal. Ibu mengetahui dan mengerti 2. Memberitahu ibu untuk tetap menjaga kehangatan bayinya yaitu dengan cara memakaikan topi, selimut, serta segera mengganti popok yang sudah basah. Ibu bersedia menjaga kehangatan bayinya 3. Memberitahu ibu untuk menyusui bayinya sesering mungkin minimal 2 jam sekali, atau semau bayi dan juga melakukan ASI ekslusif selama 6 bulan. Ibu bersedia menyusui bayinya sesering mungkin dan ASI ekslusif 4. Memberitahu ibu tanda bahaya yang dapat terjadi pada bayi yaitu bayi tidak mau menyusu, bayi terlihat kuning, demam tinggi, tidak sadar, dan memuntahkan ASI yang diberikan. Apabila mengalami hal tersebut sebaiknya ibu segera periksa ke bidan atau dokter untuk mendapatkan pertolongan segera. Ibu mengerti tanda bahaya yang dapat terjadi pada bayi 5. Menganjurkan ibu untuk kontrol menimbang BB dan mengukur PB rutin setiap bulan di posyandu terdekat untuk memantau pertumbuhan dan perkembangan anak. Ibu bersedia mengikuti posyandu 6. Melanjutkan observasi dan melakukan dokumentasi tindakan Tindakan telah didokumentasikan

ASUHAN KEBIDANAN PADA NEONATUS
By. Ny.L umur 24 hari normal

Pengkajian Tanggal, Jam   : 19-03-2024/ 10.30 WIB (KN 3)
Media   : kunjungan rumah

S	Ibu mengatakan tidak ada keluhan, bayinya sehat, menyusu dengan baik.
O	a. KU: baik b. Kesadaran: *Composmentis* c. BB: 3.500 gram d. Kulit: kemerahan, tidak kuning
A	By. Ny.L umur 28 hari normal membutuhkan asuhan neonatus 8-28 hari
P	1. Memberikan pujian dan support kepada ibu dan keluarga. Memotivasi ibu untuk tetap melakukan ASI ekslusif. Ibu besedia 2. Memberikan KIE kepada ibu bahwa kenaikan BB yang harus dicapai setiap bulan berdasar grafik KMS. Pada bulan pertama, kenaikan BB yang dianjurkan adalah 800 gr dari BB lahir. Ibu mengerti dan mengetahui 3. Memberitahu ibu untuk tetap menjaga kehangatan bayinya yaitu dengan cara memakaikan topi, selimut, serta segera mengganti popok yang sudah basah. Ibu bersedia menjaga kehangatan bayinya 4. Memberitahu ibu tanda bahaya yang dapat terjadi pada bayi yaitu bayi tidak mau menyusu, bayi terlihat kuning, demam tinggi, tidak sadar, dan memuntahkan ASI yang diberikan. Apabila mengalami hal tersebut sebaiknya ibu segera periksa ke bidan atau dokter untuk mendapatkan pertolongan segera. Ibu mengerti tanda bahaya yang dapat terjadi pada bayi 5. Menganjurkan ibu untuk kontrol menimbang BB dan mengukur PB rutin setiap bulan di posyandu terdekat untuk memantau pertumbuhan dan perkembangan anak. Ibu bersedia mengikuti posyandu 6. KIE tentang imunisasi wajib dan menganjurkan ibu untuk datang ke puskesamas pada saat usia 1 bulan untuk diberikan imunsasi BCG. Ibu bersedia untuk mengimunisasikan anaknya 7. Melanjutkan observasi dan melakukan dokumentasi tindakan Tindakan telah didokumentasikan

ASUHAN KEBIDANAN PADA MASA NIFAS
NY.L UMUR 22 Tahun P2A0 NIFAS NORMAL HARI KE 1
DI PUSKESMAS SUNGAI SELAN BANGKA TENGAH

TANGGAL/JAM   : 21 Februari 2024/ 07.30 WIB (KF 1)

Media   : Kunjungan dan pemeriksaan langsung

S	Ibu mengatakan jahitan agak nyeri, ibu mengaku bisa beristirahat, ibu dapat duduk maupun berjalan ke kamar mandi tanpa keluhan, sudah BAK dan bisa mandi sendiri, ganti pembalut 4-5 kali sehari, ASI sudah keluar sedikit, ibu mengaku menyusui bayi 2 jam sekali, ibu makan 3 kali sehari dan minum air putih 2 liter dalam sehari dengan tambahan jus dan sari kacang hijau. Ibu juga mengatakan sangat senang dengan kelahiran anak pertamanya ini.	
	Keadaan umum: baik	Lochea: rubra dbn, jahitan masih basah, tidak ada tanda infeksi
	Kesadaran: composmentis	*dikaji berdasarkan anamnesa dan catatan buku KIA hasil pemeriksaan di puskesmas
	TD: dbn	
	ASI: +	
	Kontraksi: keras	
	TFU: 3 jari di bawah pusat	
O	Tidak dilakukan	
A	Ny.L umur 22 Tahun P2 A0 pospartum spontan masa nifas hari ke 0 normal membutuhkan asuhan nifas 6-48 jam	
P	1. Menganjurkan ibu mencukupi kebutuhan makan minum dengan gizi seimbang. Protein membantu penyembuhan luka, proses kembalinya organ kandungan seperti sebelum hamil dan produksi ASI. Ibu bersedia, ibu tidak ada alergi. 2. Menganjurkan ibu menjaga kebersihan genetalia dan cara merawat luka jahitan perineum Ibu bersedia, ibu sudah dapat melakukan perawatan luka perineum dengan benar 3. Menganjurkan ibu tetap menyusui bayi sesuai permintaan bayi atau minimal 2 jam sekali dengan teknik menyusui yang benar. Ibu bersedia, ibu mengaku sudah diajarkan cara menyusui yang benar. 4. Menganjurkan ibu kelola stress dan istirahat cukup. Ibu bersedia. 5. Memberikan KIE tanda bahaya nifas seperti perdarahan berlebih, demam, pusing, dll. Ibu merespon dengan baik. 6. Menganjurkan ibu melanjutkan obat yang diberi dokter. Ibu bersedia, ibu diberi tablet tambah darah, antibiotik, asam mefenamat dan 2 kapsul vit A. 7. Menganjurkan ibu kontrol ulang sesuai jadwal. Ibu bersedia kontrol tanggal 20-02-2023. 8. Melakukan dokumentasi asuhan. Asuhan telah didokumentasikan	

ASUHAN KEBIDANAN PADA MASA NIFAS
NY.L UMUR 22 Tahun P2A0 NIFAS NORMAL HARI KE 7
DI PUSKESMAS SUNGAI SELAN BANGKA TENGAH

TANGGAL/JAM : 27 Februari 2024/ 07.30 WIB (KF 2)
Media : WhatsApp

S	Ibu mengaku bisa beristirahat karena dibantu suami untuk mengurus bayinya dan pekerjaan rumah lainnya, sudah BAK dan BAB tidak ada keluhan, ganti pembalut 3-4 kali sehari, ASI sudah keluar lancar, ibu mengaku menyusui bayi 2 jam sekali, ibu makan 3-4 kali sehari dan minum air putih 2 liter dalam sehari.

	Keadaan umum: baik	Lochea: serosa dbn, jahitan kering, tidak ada tanda infeksi
	Kesadaran: composmentis	
	TD: dbn	Esktremitas: tidak ada pembengkakan
	ASI: + keluar	
	Kontraksi: keras	*dikaji berdasarkan anamnesa dan catatan buku KIA hasil pemeriksaan di puskesmas
	TFU: 3 jari di atas simpisis	

O	Tidak dilakukan
A	Ny.L umur 22 Tahun P2A0 pospartum spontan masa nifas hari ke-7 normal membutuhkan asuhan nifas 3-7 hari

P	1. Memberitahu ibu tentang hasil pemeriksaan bahwa kondisi ibu normal.
	2. Memotivasi ibu untuk pemberian ASI ekslusif.
	   Ibu bersedia.
	3. Menganjurkan ibu menjaga pola makan gizi seimbang, jaga kebersihan genetalia, kelola stress dan istirahat cukup.
	   Ibu bersedia.
	4. Memberikan KIE tanda bahaya nifas seperti perdarahan berlebih, demam, pusing, dll.
	   Ibu merespon dengan baik.
	5. Menganjurkan ibu melanjutkan obat yang diberi dokter.
	   Ibu bersedia, ibu melanjutkan vitamin tambah darah yang diberikan
	6. Menganjurkan ibu kontrol ulang sesuai jadwal.
	   Ibu bersedia.

ASUHAN KEBIDANAN PADA MASA NIFAS

NY.L UMUR 22 Tahun P2A0 NIFAS NORMAL HARI KE-28
DI PUSKESMAS SUNGAI SELAN BANGKA TENGAH

TANGGAL/JAM   : 19 Maret 2023/ 10.30 WIB (KF 3)

Media   : Kunjungan rumah

S	Ibu mengatakan tidak ada keluhan, ibu mengaku bisa beristirahat karena dibantu suami untuk mengurus bayinya dan pekerjaan rumah lainnya.
O	Keadaan umum: baik Kesadaran: composmentis TD: 110/70 mmHg N: 85x/menit R: 22x/menit ASI: + TFU: tidak teraba Lochea: alba dbn, jahitan kering Payudara: puting bersih menonjol, terdapat pengeluaran ASI Esktremitas: tidak ada pembengkakan
A	Ny.L umur 22 Tahun P2A0 pospartum spontan masa nifas hari ke-28 normal membutuhkan asuhan nifas 8-28 hari

P	1. Memberitahu ibu hasil pemeriksaan dalam batas normal.
	    Ibu mengerti dan mengetahui serta merasa senang
	2. Memberikan dukungan kepada ibu dan keluarga untuk tetap melakukan ASI ekslusif.
	    Ibu bersedia melakukan ASI ekslusif
	3. Menganjurkan ibu tetap menjaga pola makan gizi seimbang, jaga kebersihan genetalia, kelola stress dan istirahat cukup.
	    Ibu bersedia
	4. Memberikan KIE tanda bahaya nifas
	    Ibu merespon dengan baik.
	5. Memberikan KIE waktu memulainya hubungan seksual setelah nifas selesai atau perdarahan telah berhenti, Ibu mengerti dan mengatakan untuk berhubungan saat masa nifas sudah selesai karena masih takut.
	6. KIE tentang macam- macam kontrasepsi untuk ibu menyusi.
	7. Melakukan dokumentasi asuhan. Asuhan telah didokumentasikan

ASUHAN KEBIDANAN PADA MASA NIFAS
NY.L UMUR 22 Tahun P2A0 NIFAS NORMAL HARI KE-42
DI PUSKESMAS SUNGAI SELAN BANGKA TENGAH

TANGGAL/JAM : 21 Maret 2023/ 10.00 WIB (KF 4)

Media : whatsap

S	Ibu mengatakan tidak ada keluhan, ASI lancar dan tidak ada masalah menyusui, ibu mengaku bisa beristirahat cukup, ibu dapat melakukan aktivitas rumah tangga seperti biasa, sudah BAK dan BAB tidak ada keluhan, darah nifas sudah berhenti (tidak ada pengeluaran dari jalan lahir), makan 3-4 kali sehari dengan makanan selingan, minum minimal 2 liter sehari. Ibu sudah menggunakan kontrasepsi pil menyusui.

	Keadaan umum: baik Kesadaran: composmentis TD: 120/70 mmHg N: 90 x./menit R: 22 x/menit S: 36,8ºC	Mata: sklera putih, konjungtiva merah muda Payudara: bersih, puting menonjol, pengeluaran ASI, tidak ada lecet atau bendungan ASI Genetalia: tidak ada pengeluaran Ekstremitas: bergerak aktif tidak ada oedema *dikaji berdasarkan anamnesa dan catatan buku KIA hasil pemeriksaan di puskesmas
O	Tidak dilakukan	
A	Ny.L umur 22 Tahun P2A0 pospartum spontan masa nifas hari ke-42 normal akseptor KB pil membutuhkan asuhan nifas 29-42 hari	
P	1. Memberikan dukungan ibu untuk pemberian ASI ekslusif Ibu bersedia. 2. Menganjurkan ibu tetap menjaga pola makan gizi seimbang, jaga kebersihan genetalia, kelola stress dan istirahat cukup Ibu bersedia. 3. KiE tentang pil progestin cara kerja, keuntungan efek samping cara pemaikaiannya yaitu Pil progestin harus diminum secara rutin setiap hari pada waktu yang sama, jika lupa minum 1 pil, maka harus segera minum pil setelah ingat sebanyak 2 pil pada hari yang sama. jika lupa minum 2 pil atau lebih, maka harus minum sebanyak 2 pil setiap hari sampai sesuai jadwal yang ditetapkan. Gunakan kontrasepsi lain (kondom) sampai paket pil habis. Sehingga ibu dianjurkan untuk selaku mengingat jam minum pil misal dengann bantuan alarm. Ibu bersedia mematuhi anjuran bidan. 4. Melakukan dokumentasi asuhan. Asuhan telah didokumentasikan	

2. *Informed Consent*

INFORMED CONSENT (SURAT PERSETUJUAN)

Yang bertanda tangan di bawah ini:

Nama : Leni

Tempat/Tanggal Lahir : Pangkal Pinang, 6 Oktober 2001

Alamat : Desa Sungal Selan Bangka Tengah

Bersama ini menyatakan kesediaan sebagai subjek dalam praktik *Continuity of Care* (COC) pada mahasiswa Prodi Pendidikan Profesi Bidan T.A. 2023/2024. Saya telah menerima penjelasan sebagai berikut:

1. Setiap tindakan yang dipilih bertujuan untuk memberikan asuhan kebidanan dalam rangka meningkatkan dan mempertahankan kesehatan fisik, mental ibu dan bayi. Namun demikian, setiap tindakan mempunyai risiko, baik yang telah diduga maupun yang tidak diduga sebelumnya.

2. Pemberi asuhan telah menjelaskan bahwa ia akan berusaha sebaik mungkin untuk melakukan asuhan kebidanan dan menghindarkan kemungkinan terjadinya risiko agar diperoleh hasil yang optimal.

3. Semua penjelasan tersebut di atas sudah saya pahami dan dijelaskan dengan kalimat yang jelas, sehingga saya mengerti arti asuhan dan tindakan yang diberikan kepada saya. Dengan demikian terdapat kesepahaman antara pasien dan pemberi asuhan untuk mencegah timbulnya masalah hukum di kemudian hari.

Demikian surat persetujuan ini saya buat tanpa paksaan dari pihak manapun dan agar dipergunakan sebagaimana mestinya.

Yogyakarta, ...Januari 2024

Mahasiswa　　　　　　　　　Klien

Nisla Anih　　　　　　　　　LENI

3. Surat Keterangan telah Menyelesaikan COC

SURAT KETERANGAN

Yang bertanda tangan di bawah ini:

Nama Pembimbing Klinik   : Juminarsih, S.Tr.Keb
Instansi   : Puskesmas Sungai Selan

Dengan ini menerangkan bahwa:

Nama Mahasiswa   : Lisken Anita
NIM   : P07124523232
Prodi   : Pendidikan Profesi Bidan
Jurusan   : Kebidanan Poltekkes Kemenkes Yogyakarta

Telah selesai melakukan asuhan kebidanan berkesinambungan dalamrangkapraktik kebidanan holistik *Continuity of Care* (COC)

Asuhan dilaksanakan pada tanggal .... sampai dengan ....

Judul asuhan: ASUHAN BERKESINAMBUNGAN PADA NY.L UMUR 22 TAHUN DARI MASA KEHAMILAN SAMPAI KELUARGA BERENCANA DENGAN FAKTOR RISIKO KEKURANGAN ENERGI KRONIK (KEK) DI PUSKESMAS SUNGAI SELAN KABUPATEN BANGKA TENGAH

Demikian surat keterangan ini dibuat dengan sesungguhnya untuk dipergunakansebagaimana mestinya.

Yogyakarta, Maret 2024
Bidan (Pembimbing Klinik)

(Juminarsih, S.Tr.Keb)

4. Dokumentasi Foto Pelaksanaan COC

5. Referensi Jurnal

RESEARCH ARTICLE

Early initiation of breastfeeding and severe illness in the early newborn period: An observational study in rural Bangladesh

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Abstract

Background

In Bangladesh, neonatal sepsis is the cause of 24% of neonatal deaths, over 65% of which occur in the early-newborn stage (0–6 days). Only 50% of newborns in Bangladesh initiated breastfeeding within 1 hour of birth. The mechanism by which early initiation of breastfeeding reduces neonatal deaths is unclear, although the most likely pathway is by decreasing severe illnesses leading to sepsis. This study explores the effect of breastfeeding initiation time on early newborn danger signs and severe illness.

Methods and findings

We used data from a community-based trial in Bangladesh in which we enrolled pregnant women from 2013 through 2015 covering 30,646 newborns. Severe illness was defined using newborn danger signs reported by The Young Infants Clinical Science Study Group. We categorized the timing of initiation as within 1 hour, 1 to 24 hours, 24 to 48 hours, ≥ 48 hours of birth, and never breastfed. The analysis includes descriptive statistics, risk attribution, and multivariable mixed-effects logistic regression while adjusting for the clustering effects of the trial design, and maternal/infant characteristics. In total, 29,873 live births had information on breastfeeding among whom 19,914 (66.7%) initiated within 1 hour of birth, and 4,437 (14.8%) neonates had a severe illness by the seventh day after birth. The mean time to initiation was 3.8 hours (SD 16.6 hours). The proportion of children with severe illness increased as the delay in initiation increased from 1 hour (12.0%), 24 hours (15.7%), 48 hours (27.7%), and more than 48 hours (36.7%) after birth. These observations would correspond to a possible reduction by 15.9% (95% CI 13.2–25.9, $p < 0.001$) of severe illness in a real world population in which all newborns had breastfeeding initiated within 1 hour of birth. Children who initiated after 48 hours (odds ratio [OR] 4.13, 95% CI 3.48–4.89, $p < 0.001$) and children who never initiated (OR 4.77, 95% CI 3.52–6.47, $p < 0.001$) had the

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highest odds of having severe illness. The main limitation of this study is the potential for misclassification because of using mothers' report of newborn danger signs. There could be a potential for recall bias for mothers of newborns who died after being born alive.

Conclusions

Breastfeeding initiation within the first hour of birth is significantly associated with severe illness in the early newborn period. Interventions to promote early breastfeeding initiation should be tailored for populations in which newborns are delivered at home by unskilled attendants, the rate of low birth weight (LBW) is high, and postnatal care is limited.

Trial registration

Trial Registration number: anzctr.org.au ID ACTRN12612000588897.

Author summary

Why was this study done?

- Severe illness, including sepsis, is one of the leading causes of newborn deaths in low-and-middle-income countries and is responsible for 42% deaths in the early neonatal period (0–7 days).
- WHO currently stresses the importance of initiating breastfeeding within the first hour of birth.
- We identified studies conducted in Egypt, India, Nepal, Ghana, Tanzania, and Ethiopia in the past 2 decades that specifically examined the role of timing of breastfeeding initiation and neonatal survival.
- We found no direct evidence reporting the mechanism by which initiation within the first hour of birth can reduce early newborn (0–7 days) deaths.

What did the researchers do and find?

- We report the effect of early initiation of breastfeeding on severe illnesses in the early newborn period using data from a large population-based cohort.
- We defined severe illness using newborn danger signs reported in The Young Infants Clinical Signs Study Group.
- Our results show that the earlier the initiation of breastfeeding, the lower the risk of having severe illnesses in the early newborn stage.
- By accounting for possible reverse causality from infants too ill to initiate breastfeeding, we have established that starting breastfeeding beyond the first hour of life can double the likelihood of having severe illness.

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What do these findings mean?

- Early initiation of breastfeeding within 1 hour of birth reduces neonatal mortality, and a reduction in the rate of severe illnesses, including suspected sepsis, likely mediates this effect.

- Our work highlights the need to design and evaluate interventions to promote and support early initiation of breastfeeding that engage women who are at the highest risk of delaying initiation of breastfeeding, as well as those assisting them at delivery.

- Policymakers need to prioritize the effective implementation of interventions to support early and sustained exclusive breastfeeding as priorities for global public health.

Introduction

Globally 2.7 million newborns died during the first 28 days of life (0–27 days) in 2015 [1]. More than a third of these neonatal deaths occurred on the first day, and three-quarters in the early neonatal period, i.e., 0 to 6 days [2,3]. In Bangladesh, overall neonatal mortality has decreased from 55 per 1,000 live births in 1990 [4] to 23 per 1,000 live births in 2015 [1], with an average yearly reduction of 1 death per 1,000. However, this reduction is 3 times slower than the reduction of under-5 mortality over the same period, and neonatal deaths now account for 62% of all under-5 deaths [1], whereas early-neonatal deaths (19.3/1,000) contribute to over 65% of all neonatal deaths.

Sepsis is considered the final common pathway to neonatal death due to severe illnesses and various invasive infections [5]. Neonatal sepsis is one of the leading causes of neonatal deaths in developing countries and is responsible for 13% of deaths in the neonatal period and 42% of deaths in the first 7 days of life [6]. A quarter of the neonatal deaths in Bangladesh are a result of severe illnesses, including, sepsis, tetanus, and diarrhea [1,3]. Despite being highly preventable, severe illnesses including sepsis is a predominant cause of death among newborns globally [7,8] and in Bangladesh [9].

WHO recommends early initiation of breastfeeding within 1 hour of birth as the first step toward ensuring optimal breastfeeding [10]. Literature [11,12] suggests that successful early initiation of breastfeeding facilitates sustained optimal breastfeeding practices throughout infancy. Yet only about 2 in every 5 newborns worldwide and 40% of newborns in South Asia begin breastfeeding within the first hour of life [10,12,13]. In Bangladesh, although there have been some improvements in other breastfeeding practices, including exclusivity and duration of breastfeeding, 49% of children are still initiating breastfeeding after the first hour of birth [14,15].

Recent systematic reviews [16,17] and global reports by WHO [13,18] have revealed that the risk of neonatal mortality increases by about 33% with the delay in initiation between 2 to 23 hours compared with those who initiated within the first hour of birth. Studies from Nepal, Ghana, and India [11,19,20] have reported a protective effect of early initiation of breastfeeding with a 44% reduction in the risk of death among babies surviving the first 48 hours and a 42% reduction in the risk of death among low birth weight (LBW) babies. Timely initiation of breastfeeding can be crucial in reducing infection associated with neonatal mortality [16,20] by enhancing the newborns' immune response to infectious pathogens [21,22]. It is still not confirmed whether early initiation of breastfeeding leading to a lower incidence of severe

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illnesses leading to suspected sepsis is the most likely pathway to reduce neonatal deaths, especially in the first 7 days of life. There exists a gap in the evidence explaining the mechanism by which delayed initiation of breastfeeding may impact mortality in resource-limited settings of developing countries. Early initiation ensures that the infant receives colostrum, which is rich in several immunoglobulins and nutritional factors protecting the newborn from short- and long-term illnesses and death [20,23].

Although several articles report the importance of exclusive breastfeeding and duration of breastfeeding in infancy [24–26], we found no study that looked at the influence of the time of initiation of breastfeeding on newborn danger signs with an emphasis on severe illnesses in the early newborn period, i.e., in the first 7 days. In this paper, we aim to explore the effect of timing of breastfeeding initiation on severe illnesses and newborn danger signs among newborns in the first 7 days after birth in rural Bangladesh.

Methods

Parent trial and settings

We collected data for this analysis from a large community-based randomized controlled trial of the effect of iron folic-acid supplementation started early ($\leq$12 weeks) and sustained throughout pregnancy on neonatal mortality. Details of the methods and design of the trial are published as a study protocol by Huda and colleagues [27]. We conducted the trial between 2013 and 2015 in the rural areas of 5 districts in Bangladesh. All women aged between 15 and 49 years at the time of enrollment are permanent residents of the study area and became pregnant during the enrolment period were recruited as study participants. These women were followed throughout pregnancy until 6 weeks after pregnancy outcome. Pregnant women were identified by study personnel from active pregnancy surveillance conducted by BRAC (an international nongovernment organization) field workers (*Shyastho Sebikas*) to identify women with menses delayed more than 45 days from the first date of their last menstrual cycle. Study personnel then enrolled consenting women following confirmation of pregnancy using a "pregnancy confirmatory dipstick test." The analysis for this paper was planned at the time the trial was set up, and the questions required for this analysis was designed before the trial was implemented. We registered the trial with the Australia New Zealand Clinical Trials Registry (ANZCTR). The registration ID is ACTRN12612000588897.

Data collection

Enrollment, follow-up, and data collection was identical throughout the study area. We collected follow-up information from each woman until 42 days after pregnancy outcome. Baseline data including demographic and socioeconomic indicators, intake of nutritional supplements (prior to enrollment and during the study period), parental education, birth history, and maternal health condition during pregnancy. Incentives were given to enrolled women for notifying the research team of the birth within 24 hours of delivery. Study personnel collected information at 48 hours after birth on essential newborn care practices and at the 7 to 10 day follow-up visit on day-to-day neonatal danger signs from birth until the seventh day after birth.

On the first postbirth visit (at 48 hours of birth), mothers were asked if they had ever breastfed their newborn, and if they did, how much time elapsed between birth and initiation of breastfeeding. In case a live-born infant died before the first postbirth follow-up visit, we still collected information on breastfeeding initiation for the child before their death. We also measured the birth weight of the child at this visit using a portable digital scale and infant weighing pouch (WeiHeng WH-A08). At the 7 to 10 day follow-up visit, we asked the mothers

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to give a day-by-day account of the onset, continuation, and cessation of each of the danger signs during the first 7 days. For infants who died within 7 days of birth, we collected the danger signs before death and included them in the analysis. We estimated the gestational age of the infants in weeks, from the last menstrual period reported by mother at enrollment until the reported date of birth outcome.

Study definitions

We included in the analysis live-born infants with known breastfeeding initiation status, including those who were never breastfed. Breastfeeding initiation was the time in hours after birth, when the newborn was first put to the mother's breast. To estimate the extent of adherence and nonadherence to WHO recommendation of initiation within an hour of birth, we categorized the variable as within 1 hour, ≥ 1 hour to <24 hours, ≥ 24 hours to <48 hours, ≥ 48 hours, and never breastfed. We excluded women whose breastfeeding status was unknown or missing.

The outcome variable severe illness was defined using newborn danger signs reported in The Young Infants Clinical Signs Study Group [28,29] and the Bangladesh Neonatal Health Strategy [30]. We identified severe illness in newborns if their mother reported the presence of any 1 of the following 6 signs and symptoms: unusually cold/clammy skin, high body temperature, unconscious/no movement or lethargic, caregivers report of convulsions, rapid breathing or difficulty in breathing, and unable to breastfeed. We did not have information on the seventh sign used in previous studies, namely, severe chest indrawing. Use of this definition for severe illness is recommended for studies in low resource settings, in which suspected sepsis cannot be confirmed with the usual clinical parameters and cut-offs [31,32]. We present severe illness as a binary outcome variable indicating presence or absence of the outcome of interest.

Potential confounders were classified as infant, maternal, and household characteristics. Infant characteristics included the sex of the child (male and female); the birth weight [$\geq 2,500$ g, 2000–2499 g (LBW), and ≤ 2000 g (LBW)]; the birth outcome [multiple and single]; colostrum (given and not given); appropriate care of the umbilical cord; application of material after cutting the umbilical cord; timing of the first bath after birth (within and after 72 hours); and timing of drying after birth (within and after 5 minutes). Maternal characteristics included age (<20 years and ≥ 20 years); gestational age at birth (<28 weeks, 28–33 weeks, 34–36 weeks, and ≥ 37 weeks); education (no education, primary completed, secondary completed, and higher); parity (primiparous and multiparous); stillbirth/miscarriage of previous child; prolonged labor during childbirth; and fever during childbirth. In addition, we constructed a combined variable for type, place, and skilled attendance at delivery (normal vaginal delivery [NVD] at facility by skilled attendant, NVD at home by unskilled attendant, NVD at home by skilled attendant, and caesarean section (CS) at facility by skilled attendant). Household characteristics included the wealth quintiles. We used standard demographic health survey methods to form a list of household assets to construct the wealth index [33]. Most of the selected potential confounders were reported in previous studies that explored the determinants of the timing of initiation of breastfeeding [11,19,20,22,23].

Statistical analysis

We used frequency distributions to describe the baseline characteristics of the study population and summarized all data on household, maternal, and infant characteristics using descriptive statistics of proportions for categorical variables. All descriptive statistics are presented by the early onset of newborn danger signs for severe illnesses in the newborns. The mean time to

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initiate breastfeeding is calculated among children for whom we have a record of their breast-feeding initiation time.

To examine the effect of time of initiation of breastfeeding on the primary outcome of severe illnesses in the early neonatal period, we used a multivariable mixed-effects logistic regression model, adjusting for infant, maternal, and household characteristics that showed an independent association ($p < 0.20$) with the outcome in an univariable model. The variance inflation factor was used to assess collinearity between covariates included in the multivariable model. We examined the outcome variable and found it varied by cluster (data not shown) indicating the need to use multilevel mixed-effects models. All regression models were adjusted for clustering of participants from 100 clusters (from a cluster randomized control trial [RCT]) in 5 districts using multilevel random effects, with clusters nested within district [34]. The variable for treatment arms had been included in all regression models in order to account for the effects of the intervention. We present the odds ratios (ORs) and 95% CIs for severe illness for each category of time to initiate breastfeeding.

To examine the probability of potential reverse causality due to maternal infections and complications at childbirth, we performed a sensitivity analysis excluding the infants whose mother reported prolonged labor or fever around the time of childbirth. We then fitted a restricted version of the adjusted model (restricted model 1) for the same covariates. Further, to explore the probability of reverse causality due to the child being too ill to initiate breastfeeding early, we performed another sensitivity analysis, excluding the children who died in the first 48 hours of birth. We fitted this restricted model (restricted model 2), adjusting for the same covariates of the adjusted model. Finally, we compared the adjusted OR (aOR) of all 3 models to identify any possible influence of reverse causality due to maternal complications during the time of delivery or severe illness of the child immediately after birth.

The population attributable fraction (PAF) of severe illnesses among newborns whose breastfeeding was initiated 1 hour, 24 hours, or 48 hours of birth were calculated using the formula below [35,36]:

$$PAF = P_b\left(\frac{OR - 1}{OR}\right).$$

Here, P_b is the proportion of children with breastfeeding initiated after 1 hour, 24 hours, or 48 hours of birth, and OR is the OR of initiating breastfeeding after 1 hour, 24 hours, and 48 hours of birth. For ease of interpretation, we will present the PAF as population attributable risk percent (PAR%) by multiplying PAF by 100. We calculated the crude PAR% using the ORs from the univariable association. To measure the adjusted contribution of delayed initiation of breastfeeding on the total risk of having severe illness, the adjusted PAR% was calculated using the aORs from both the final adjusted model and restricted model. We estimated 95% CI for all PAR%. We performed all statistical analyses using STATA version 15 (Stata Corporation, College Station, TX).

Ethics

The Ethical Review Committee (ERC) of the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), and the Human Research Ethics Committee (HREC) of the University of Sydney have granted ethics approval for the parent study. We obtained written informed consent from pregnant women during enrollment into the study, which provided full disclosure regarding the study.
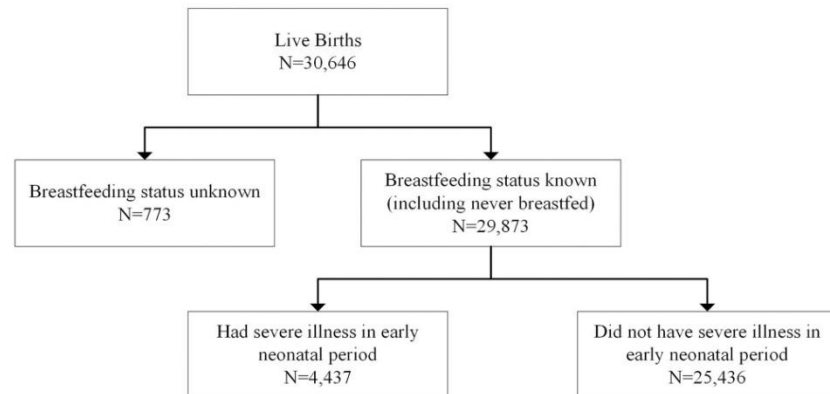
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Fig 1. Flowchart of infants with defined breastfeeding initiation time, included in the analysis.

Results

There were 30,646 live-born infants during the study period, and time to initiation of breastfeeding was known for 29,873 (97.5%) infants. The remaining 773 women had no information on their breastfeeding status, and we excluded them from the analysis. Two-thirds of the newborns (66.7%) with known breastfeeding initiation status had initiated breastfeeding within 1 hour of birth. The mean time to initiate breastfeeding, among children with a record of their breastfeeding initiation time was, 3.8 hours (SD 16.6 hours). By the end of 48 hours, all but 5.7% of infants were breastfed. Severe illness in the neonatal period early (0–6 days) was reported for 4,437 (14.9%; Fig 1) infants of whom 338 (7.6%) subsequently died within the first 7 days. Among the severe illness cases, hyperthermia was the most common danger sign reported by 36.6% mothers, followed by respiratory distress reported by 37.4% mothers. Convulsion was the least reported danger sign and was reported by 7.8% mothers. Fig 2 shows the percentages of newborns who had any of the danger signs in the first 7 days after birth. Table 1 summarizes some infant, maternal, and household characteristics of the newborns by their time of breastfeeding initiation.

Table 2 presents the unadjusted ORs and aORs for the association between timing of initiation of breastfeeding and severe illness in early neonatal stage using univariable and multivariable models from the unrestricted and restricted data. There is a dose response of higher likelihood of severe illness with an increased delay in breastfeeding initiation. Infants who initiated breastfeeding between 1 to 23 hours of birth had significantly higher odds (unadjusted OR 1.45, 95% CI 1.33–1.58) of having signs of severe illness compared with children who initiated breastfeeding within 1 hour of birth. This effect was further seen to have increased for children who initiated between 24 to 47 hours (unadjusted OR 2.94, 95% CI 2.42–3.58) and after 48 hours (unadjusted OR 4.96, 95% CI 4.29–5.73).

When compared with newborns with early initiation of breastfeeding, the aORs for severe illness (Table 2) remained significantly higher among all late breastfeeding initiator groups (1–23 hours: aOR 1.37, 95% CI 1.25–1.50; 24–47 hours: aOR 2.85, 95% CI 2.31–3.52; and 48 hours
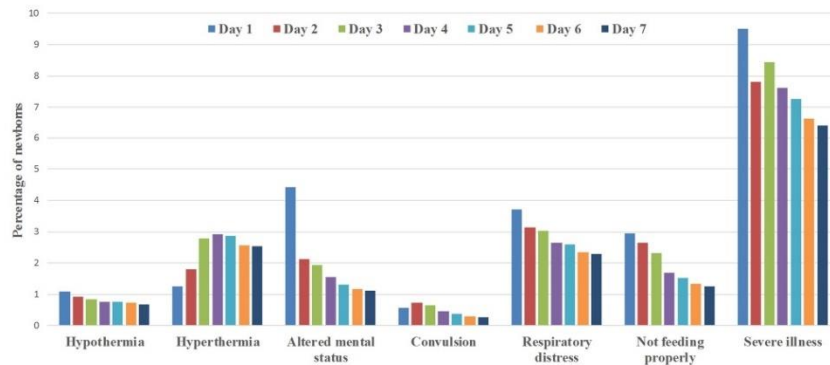
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Fig 2. Percentage of newborns (N = 29,873) presenting with any danger signs during the first 7 days of birth.

or more: aOR 4.13, 95% CI 3.48–4.89). The highest risk for severe illness and early newborn danger signs was for those who were unable to initiate breastfeeding (aOR 4.77, 95% CI 3.52–6.47) within the 7 days. The multivariable models were adjusted for confounders that had uni-variable $p < 0.2$ (S1 Table). All variance inflation factors were <5, indicating that collinearity was not an issue for the multivariable models.

In the adjusted model using unrestricted data (S1 Table), the odds of having severe illness was lower for mothers who delivered their child by unskilled birth attendants at home (aOR 0.75, 95% CI 0.67–0.84), compared with women who delivered at a facility with skilled attendants. Performing CS at a facility by skilled attendants was associated with a reduced risk of early newborn danger signs (aOR 0.60, 95% CI 0.52–0.68). Infants born with a birthweight of ≥2,500g and who received appropriate thermal and cord care at birth had significantly (p<0.0001) lower odds of having severe illnesses than those who had LBW and inappropriate postbirth care. Infants who were first born, whose mother's preceding pregnancy ended in stillbirth or miscarriage, and whose mother has prolonged labor during childbirth had signifi-cantly higher odds of having severe illnesses in the first 7 days after birth.

Sensitivity analysis of the adjusted association after excluding the children whose mother had prolonged labor or fever at childbirth (Table 2) resulted in slightly higher odds of severe illness among all the breastfeeding initiation categories. The aORs of having early newborn danger signs and severe illness among late initiators slightly increased for children of women who did not have prolonged labor or fever during childbirth. About one-fifth (18.5%) of the 19,914 women who initiated within the first hour had prolonged labor. The increased likeli-hood of early newborn danger signs in the reference group leads to an overall increase in odds of severe illnesses among all late initiators. Excluding children who died in the first 48 hours (Table 2) had little to no effect on the adjusted risk of early newborn danger signs and severe illnesses among late initiators compared with the final adjusted model. The unadjusted and adjusted associations between severe illnesses in the early neonatal stage and a range of con-founders used to generate the models using unrestricted and restricted data are shown in S1 Table. The association between breastfeeding initiation time and severe illness were similar when the regression model was adjusted for all covariates as continuous variables (S2 Table).

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Table 1. Distribution of infant, maternal, and household characteristics of study participants by time when breastfeeding was initiated.

Characteristics	Breastfeeding initiated	
	Within 1 hour (*n* = 19,914)	After 1 hour (*n* = 9,959)
Infant characteristics		
Sex of child		
Female	9,461 (47.5)	4,740 (47.6)
Male	10,453 (52.5)	5,219 (52.4)
Birth weight		
≥2,500 g	13,917 (76.7)	7,025 (78.4)
2,000–2,499 g	3,571 (19.7)	1,495 (16.7)
<2,000 g	660 (3.6)	438 (4.9)
Birth outcome		
Single	19,773 (99.3)	9,732 (97.7)
Multiple	141 (0.7)	227 (2.3)
Colostrum		
Given	19,757 (99.2)	8,826 (88.6)
Not given	157 (0.8)	1,133 (11.4)
Instrument boiled before the cord was cut		
Boiled	16,386 (82.3)	7,719 (77.5)
Not boiled	3,528 (17.7)	2,240 (22.5)
Application of material after cutting cord		
Applied nothing	17,298 (86.9)	7,919 (79.5)
Material applied to cord	2,616 (13.1)	2,040 (20.5)
Time of first bath		
After 72 hours	11,452 (57.5)	6,204 (62.3)
Within 72 hours	8,462 (42.5)	3,755 (37.7)
Timing of drying		
Within 5 minutes	11,730 (58.9)	4,552 (45.7)
After 5 minutes/not dried	8,184 (41.1)	5,407 (54.3)
Maternal Characteristics		
Mother's age		
≥20 years	15,817 (79.4)	7,617 (76.5)
<20 years	4,097 (20.6)	2,342 (23.5)
Gestational age at birth		
≥37 weeks	14,647 (73.6)	7,177 (72.1)
34–36 weeks	3,163 (15.9)	1,650 (16.6)
28–33 weeks	1,858 (9.3)	997 (10.0)
<28 weeks	246 (1.2)	135 (1.4)
Maternal education		
Higher	1,026 (5.2)	606 (6.1)
Secondary	7,827 (39.3)	4,360 (43.8)
Primary	6,195 (31.1)	2,937 (29.5)
No education	4,866 (24.4)	2,056 (20.6)
Parity		
Multiparous	13,070 (65.6)	6,118 (61.4)
Primiparous	6,844 (34.4)	3,841 (38.6)
Type, place, and skilled attendance at delivery		
NVD facility skilled	2,357 (11.8)	1,334 (13.4)

(*Continued*)

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Table 1. (Continued)

Characteristics	Breastfeeding initiated	
	Within 1 hour (n = 19,914)	After 1 hour (n = 9,959)
NVD home unskilled	14,096 (70.8)	5,394 (54.2)
NVD home skilled	1,230 (6.2)	457 (4.6)
CS facility skilled	2,231 (11.2)	2,774 (27.9)
Stillbirth/miscarriage of previous child		
No	19,012 (95.5)	9,478 (95.2)
Yes	902 (4.5)	481 (4.8)
Prolonged labor during childbirth		
No	16,221 (81.5)	7,602 (76.3)
Yes	3,693 (18.5)	2,357 (23.7)
Fever (mother) at childbirth		
No	19,636 (98.6)	9,735 (97.8)
Yes	278 (1.4)	224 (2.2)
Household characteristics		
Asset		
First (Lowest)	4,101 (20.6)	1,904 (19.1)
Second	4,157 (20.9)	1,794 (18.0)
Middle	4,276 (21.5)	1,722 (17.3)
Fourth	4,007 (20.1)	2,100 (21.1)
Fifth (Highest)	3,373 (16.9)	2,439 (24.5)

Abbreviations: CS, caesarean section; NVD, normal vaginal delivery

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Table 2. Unadjusted OR and aOR of presenting with any one early newborn danger signs (severe illness) among newborns (0–6 days) by breastfeeding initiation time categories (N = 29,873).

Breastfeeding initiation time	Breastfeeding initiated n (%)	Severe illness n (%)	Unadjusted OR (95% CI)	aOR[†] (95% CI)	aOR[††] (95% CI) using RD1[a]	aOR[†] (95% CI) using RD2[b]
<1 hour	19,914 (66.7)	2,382 (12.0)	1.00	1.00	1.00	1.00
1 to <24 hours	7,644 (25.6)	1,200 (15.7)	1.45 (1.33–1.58)*	1.37 (1.25–1.50)*	1.41 (1.29–1.55)*	1.36 (1.24–1.49)*
24 to <48 hours	599 (2.0)	166 (27.7)	2.94 (2.42–3.58)*	2.85 (2.31–3.52)*	2.87 (2.32–3.55)*	2.87 (2.32–3.54)*
≥48 hours	1,016 (3.4)	373 (36.7)	4.96 (4.29–5.73)*	4.13 (3.48–4.89)*	4.26 (3.59–5.04)*	4.15 (3.49–4.92)*
Never breastfed	700 (2.3)	316 (45.1)	7.05 (5.99–8.31)*	4.77 (3.52–6.47)*	5.06 (3.74–6.85)*	5.96 (4.29–8.28)*

[†]Adjusted for sex of child; birth weight; instrument boiled before the cord was cut; application of material after cutting cord; time of first bath; timing of drying; colostrum; gestational age at birth; parity; type, place, and skilled attendance at delivery; stillbirth/miscarriage of previous child; prolonged labour during childbirth; fever (mother) at childbirth; assets; and the treatment arms. Also adjusted for clustering of participants from 100 clusters in 5 districts using multilevel random effects (clusters nested within district).

[††]Adjusted for all the above mentioned variables except prolonged labor during childbirth and fever (mother) at childbirth. Also adjusted for clustering effect.

[a]Excluding children (n = 6,340) whose mother reported maternal complications (prolonged labor or fever) during the time of delivery.

[b]Excluding children (n = 470) who died in the first 48 hours.

*$p < 0.001$

Abbreviations: aOR, adjusted odds ratio; OR, odds ratio; RD, restricted data

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Table 3. Crude and adjusted PAR% of severe illness in all breastfeeding initiation time categories.

Breastfeeding initiation time	Crude PAR% (95% CI)	Adjusted PAR% (95% CI)	Adjusted PAR% (95% CI) RD1[a]	Adjusted PAR% (95% CI) RD2[b]
After 1 hour	23.6 (21.1–25.9)	15.9 (13.2–18.5)	16.7 (14.0–19.4)	16.0 (13.2–18.7)
After 24 hours	14.0 (12.7–15.4)	10.6 (9.1–12.0)	10.8 (9.3–12.3)	10.7 (9.1–12.2)
After 48 hours	11.9 (10.6–13.1)	8.5 (7.2–9.8)	8.8 (7.5–10.1)	8.5 (7.1–10.0)

[a]Excluding children ($n = 6,340$) whose mother reported maternal complications (prolonged labor or fever) during the time of delivery.

[b]Excluding children ($n = 470$) who died in the first 48 hours.

Abbreviations: PAR%, population attributable risk percent; RD, restricted data

Table 3 shows that the PAR% decreases with increased delay in breastfeeding initiation. After adjusting for confounders, about 16% of the early newborn danger signs and severe illness could have been reduced if all newborns initiated breastfeeding within the first hour of birth. The PAR% for initiating breastfeeding after 24 hours indicates that 10.6% of the total risk of early newborn danger signs and severe illnesses were attributable to initiating breastfeeding after the first day of birth.

Discussion

We found that early initiation of breastfeeding within an hour of birth was significantly associated with a reduced risk of early newborn (0–6 days) danger signs and severe illnesses in rural Bangladesh. We detected a dose-response relationship of increasing odds of severe illnesses in the early newborn stage with greater delay in initiation of breastfeeding after adjusting for confounders. Our findings indicate that the highest risk of presenting with early newborn danger signs following delayed initiation of breastfeeding beyond the first hour was with newborns who were first born, had very LBW (<2,000 g), did not receive appropriate cord and thermal care, were born through NVD at home with unskilled attendance, had a history of stillbirth/miscarriage of a previous sibling, or whose mother had prolonged labor during childbirth. We also found that one-sixth of the reported danger signs in the early neonatal period could be reduced if children who initiated beyond the first hour could initiate within the recommended time. Excluding children whose mother had maternal complications and those who died within 48 hours had a minimum to no effect on the fraction of severe illness cases that could be prevented. The findings from this study highlight the need to encourage women and caregivers to facilitate early initiation of breastfeeding to reduce early newborn danger signs and severe illnesses, especially among high-risk newborns.

Our study is one of the few studies that specifically explores the effect of delayed breastfeeding initiation on severe illness during the early newborn stage (0–6 days after birth), the most crucial stage of the neonatal period [37]. Most studies on the health effects of early initiation of breastfeeding have examined all-cause neonatal mortality [11,19,20,23] and infectious diseases related to neonatal mortality such as diarrhea and respiratory infections [16,38] during the entire neonatal period. In this study, information on the timing of initiation and danger signs was collected within 7 to 10 days of birth, thus reducing the recall period of reporting both the exposure and outcome. As the study sample originates from a large community-based randomized controlled trial, we were able to collect data from a large number of newborns. Sensitivity analyses excluding infants who died within 48 hours of birth, as done in several previous studies looking at mortality outcomes [11,19,20,23], resulted in no change in the risk of severe illnesses in relation to the time of initiation of breastfeeding. Even though our analysis does not provide direct evidence of the absence of reverse causation, it is very unlikely that the

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reported danger signs were due to the newborn being too sick to initiate breastfeeding within 1 hour of birth. Further sensitivity analysis indicates that maternal complications and signs of maternal infections around the time of childbirth may have contributed to a higher risk of severe illnesses among the newborns in all categories of timing of initiation of breastfeeding, including those who initiated within an hour of birth. The study included all newborns from a defined area of rural Bangladesh over a 12-month recruitment period and thus increased the generalizability of the study results. We present the dose-response relationship of early initiation of breastfeeding associated with a reduced risk of severe illnesses in the early neonatal period after adjusting for all possible confounders known to be associated with the timing of initiation of breastfeeding and early newborn danger signs.

Our study has several limitations. Firstly, the danger signs for severe illnesses used in this study includes 6 out of the 7 signs and symptoms proposed in the Young Infants Clinical Signs Study [28], but we did not collect the seventh danger sign, severe chest indrawing. A study in Bangladesh [39] found that severe chest indrawing has very low specificity and thus contributes to overestimating the proportion of children with severe illness requiring hospital admission. Thus, omitting this symptom in the outcome in our study will not lead to an overestimate of the effect of breastfeeding on newborn danger signs. In addition, there exists a potential for misclassification of the outcome considering that severe illness was defined using the mother's report of episodes of danger signs, and there were no confirmatory tests using biomarkers to classify the severity. Secondly, mothers of dead infants may have recalled danger signs and breastfeeding initiation times differently compared with the mothers of surviving newborns, thus incorporating a potential recall bias. The short recall period of 7 to 10 days is likely to have minimized any recall bias but not eliminated it. However, there was no change in risk of presenting with newborn danger signs following delayed initiation of breastfeeding when the model was applied to children who survived 48 hours from birth. This implies that any recall bias was minimal and provides evidence that our results were not the result of reverse causality. Considering the short recall period for all mothers, the generic approach to defining severe illnesses, and the lack of evidence of reverse causality our findings provide strong evidence that delayed initiation of breastfeeding increases the risks of early newborn danger signs and severe illness.

Timely initiation of breastfeeding is the first step toward ensuring exclusive breastfeeding and sustaining optimal breastfeeding practices [40]. Furthermore, early initiation and early attachment to the mother's breast promotes thermal care of the infant and can reduce the risk of hypothermia immediately after birth [11]. Delayed initiation of breastfeeding has a strong biological plausibility of leading to severe illnesses, considering the important role of breastfeeding in enhancing immune functions during the early stages of life [10,41]. Delayed initiation is known to be further compounded with an early introduction of prelacteal feeding [23,40], which is known to have a detrimental effect on the immune system and has the potential to lead to infection and suspected sepsis [42]. Early exposure to breastmilk ensures intake of colostrum, which contains a high concentration of lactoferrin, immunoglobulin A (IgA), leukocytes, and specific developmental factors [43,44]. The amount of these proteins and immunoglobulin (especially IgA) [45] is significantly higher in colostrum than in the transitional milk (6 to 14 days of lactation), and mature milk (after the 15th day of lactation) [46]. Colostrum intake accelerates intestinal maturation, increases the integrity of the epithelial layer, promotes epithelial recovery from infections, has anti-inflammatory and antimicrobial potential, and decreases the risk of microbial translocation [41,47].

Findings in this study are consistent with previous studies that looked at the relationship between early initiation of breastfeeding and all-cause mortality [11,19,20,23] and morbidity [16,38]. Studies in Ghana [11], India [20], Nepal [19], Egypt [22], and Tanzania [47] report a

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similar dose-response relationship of early initiation of breastfeeding on survival. The rate of initiation of breastfeeding within the first hour is higher in this study than that reported in studies from Nepal (3.4%) [19] and Ghana (43%) [11] and lower than reported in studies from Tanzania (87%) [47]. The study from India [20] looked at the change in risk of adverse outcomes associated with initiation within the first day and later, rather than the association for initiation within the first hour. The rates of LBW reported in studies from Nepal (29.8%) [19] and India (22%) [20] were similar to our study and both present the higher risk of delayed initiation of breastfeeding associated with adverse outcomes among LBW infants (<2,500 g).

In this study, we found that prolonged labor and fever during childbirth contributed to a higher risk of severe illnesses in all breastfeeding initiation groups, especially in the reference group of those who initiated within 1 hour of birth, because two-thirds of the children fall in this group. A higher proportion of mother-infant dyads who never initiated breastfeeding reported having prolonged labor compared with newborns who initiated within an hour of birth (35.7% versus 18.5%). Previous studies [48–50] support these findings and provide evidence that neonatal infection in the first week of life is associated with maternal infection and intrapartum fever. Another study suggests that women who had delivery complications were less likely to initiate breastfeeding on time [51].

We found that women who had caesarean delivery at a facility by skilled attendants had a lower likelihood of presenting with early newborn danger signs in association with delayed breastfeeding initiation compared with those who had a NVD. Previous studies, mostly in high-income countries, compared NVD at a facility with caesarean delivery at a facility and showed more risk of infections in the latter group [40,52–54]. Findings in our study may have resulted from the high percentage (70%) of all births taking place at home, mostly in unhygienic and infection-prone surroundings with limited postnatal support. Hence, the adjusted association showed that babies born through caesarean delivery by skilled attendance at a facility had a lower likelihood of severe illness compared with NVD at a facility.

The findings in this study indicate that the timing of initiation of breastfeeding, especially within the first hour of birth, is significantly associated with reduced risk of severe illness in the early neonatal period. Hence the findings support the need to reinforce the implementation of existing recommendations from WHO and UNICEF [13] to "place the child in skin-to-skin contact with mothers immediately following birth for at least an hour and encourage the mother to initiate breastfeeding within this time," as the Step 4 of the 10 steps towards successful breastfeeding [16,55]. By improving early initiation of breastfeeding, newborn morbidity and mortality would likely decrease and could contribute to achieving Sustainable Development Goals (SDG) 2030 for reducing child mortality.

Our findings indicate the need for setting a future research agenda around developing comprehensive community-based interventions to promote initiation of breastfeeding within the first hour of birth in low- and middle-income countries to reduce early newborn danger signs and severe illness and thus reduce neonatal deaths. It is crucial for healthcare providers and birth attendants to encourage and support timely initiation regardless of the mode of delivery and birth weight of the newborn [54,56]. Interventions to promote and support early breastfeeding initiation could be designed based on the place and type of delivery and requires involvement of all role players around the time of childbirth. Such role players may include family members and birth attendants (skilled or unskilled) for home deliveries, healthcare providers for NVD at a facility, and a professionally endorsed standard guideline for caesarean delivery. Interventions should be tailored to suit the needs of populations in which the rate of LBW is high and postnatal care is limited with emphasis on first born infants and mothers who experienced pregnancy complications.

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Supporting information

S1 Table. Unadjusted and adjusted association of the confounders and severe illness among newborns in first 7 days of birth ($N = 29,873$).
(DOCX)

S2 Table. Unadjusted and adjusted odds of presenting with any one early newborn danger signs (severe illness) among newborns (0–6 days) by breastfeeding initiation time categories ($N = 29,873$) adjusted for all continuous covariates.
(DOCX)

S1 STROBE Checklist. STROBE, Strengthening the Reporting of Observational studies in Epidemiology.
(DOC)

Acknowledgments

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