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Characterization of patients admitted to the Neonatology Service of Abel Santamaría Cuadrado Hospital

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ABSTRACT

Introduction: "Newborn" or "neonate" are terms that refer to the first 28 days after birth. Ensuring access to quality maternal and neonatal health services and products is essential to improve outcomes for women and their newborns. Objective: to characterize clinically and epidemiologically the newborns admitted to the Neonatology Service of the Gynecobstetrics Block of the Abel Santamaría Cuadrado Hospital in the province of Pinar del Río during the period from January to December 2023. Methods: An observational, descriptive and cross-sectional study was carried out at the Abel Santamaría Cuadrado general hospital in the province of Pinar del Río from January to December 2023, the universe consisted of 1078 patients. Results: the study showed that of the 1078 admissions to the service during the whole year, 627 took place in the second semester, which indicates that there were more births in this period; at the end of the year, the predominant type of delivery was Casarean section with a total of 543, 10 times more than the Euktotic deliveries. Conclusions: The average gestational age for the year was 37.3 weeks; while the lowest was in the month of January with an average of 34.5, despite not being the month with the least number of births.

Keywords: Cesarean Section, Infectiosn, Income, Gestational Age, Neonatology.

Introducción

"Newborn" or "neonate" are terms that refer to the first 28 days after birth. Neonatal care cannot be provided in isolation: the provision of high-quality maternal care is equally essential to saving lives. Therefore, ensuring access to quality maternal and newborn health services and products is critical to improving outcomes for women and their newborns.(1)The establishment of the first neonatal intensive care units (NICUs) marked the beginning of neonatology as a public health priority. These units emerged

from the need to effectively treat and group critically ill newborns to improve their survival and long-term prognosis.

In neonatology, the simple doctor-patient relationship becomes more complex: the doctor-patient-parent relationship. No laboratory test can replace the proper interrelationship between these three elements, which constitute the basic strategy for applying the clinical method in this specialty. Clinical observation begins when the parents arrive for consultation with the newborn. Their facial expressions and attitudes toward the newborn are factors to consider in making a good clinical diagnosis. The most common errors made during the physical examination of the newborn are listed below.(2)

In 2023, six provinces in Cuba had infant mortality rates below the national average (7.1 per thousand live births). The best indicators were Pinar del Río with 3.1; Artemisa with 3.9; Holguín with 4.7; Sancti Spíritus with 4.8; Villa Clara with 5.7; and Matanzas with 6.9. Twenty-five municipalities did not report deaths in children under one year of age, including four in Pinar del Río (Mantua, Sandino, San Luis, and Guanes); four in Artemisa (Guanajay, Güira de Melena, Alquizar, and Candelaria); one in Havana (Regla); one in Mayabeque (San Nicolás), and four in Matanzas (Martí, Pedro Betancourt, Calimete, and Los Arabos).(3)

According to preliminary data, the Medical Records and Statistics Directorate of MINSAP reported at the end of the year 90,374 live births, and a decrease in the preschool mortality rate, from 4.1 to 3.6 per 10,000 inhabitants, with 35 fewer deaths in this age group; while the school mortality rate also decreased from 2.4 to 2.1 per 10,000 inhabitants, representing 28 fewer deaths compared to 2022.(3)

Neonatal intensive care units are a highly focused area within hospitals, as they house infants with diverse risk factors: low birth weight, immunosuppression, exposure to invasive procedures such as mechanical ventilation, vascular catheterization, parenteral nutrition, among others; as well as lengthy hospital stays and the use of broad-spectrum antibiotics. These factors, combined with the higher survival rate of premature, low-birth-weight, or congenital malformations, have led to an increase in the incidence of hospital-acquired, nosocomial, late-onset, or healthcare-associated infections.

The interaction between these risk elements and those related to the hospital environment is especially complex in the newborn.(4) Taking into account the importance of establishing good care for the seriously and critically ill neonatal patient, the main objective of this work is to clinically and epidemiologically characterize the newborns admitted to the Neonatology Service of the Gynecology-Obstetric Block of the Abel Santamaría Cuadrado Hospital in the province of Pinar del Río during the period from January to December 2023.

Methods

A retrospective, observational, descriptive, and cross-sectional study was conducted to clinically characterize patients admitted to the Neonatology Service of the Gynecology and Obstetrics Unit of the Abel Santamaría Cuadrado General Hospital in the province of Pinar del Río from January to December 2023.

The sample consisted of a total of 1,078 admissions to the service throughout the year. All admissions occurring within the aforementioned time period were included, and those that did not meet this requirement were excluded. The variables analyzed were: sex; gestational age; nutritional status; type of

delivery; report; ventilated patients; main pathologies; and deaths. Possible responses to these variables were female or male; 29 to 41 weeks of gestation; adequate, small, and large for gestational age (AGA, SGA, LGA); moderate and severe hypotrophic; eutotic or severe; critical, severe, or in need of care; IMV or SIMV, respectively. The deaths ranged in age from 0 to 6.

The gestational age (GA) variable was averaged month by month, taking into account the total number of newborns admitted each month and the mother's gestation at the time of delivery.

In terms of nutritional value, a newborn is considered AGA when the percentile is between 10 and 90; therefore, those below 10 are classified as SGA, and those above 90 are LGA. Another classification, related to the percentile, is used for newborns considered underweight; these are hypotrophic: moderate hypotrophic (3-9); severe hypotrophic (<3).

The reporting variable can be: C (Critical); G (Severe); DC (Nervous); and finally, ventilation can be: nasal IMV (noninvasive mechanical ventilation); SMIV (synchronized ventilation).

The data were collected from the Neonatal Service's Comorbidities book for 2023. A comparison was made between the first six months of the year (January-June) and the last six months (July-December), taking into account the aforementioned variables.

Results

The**TABLE 1**shows the behavior of the variables sex, gestational age, nutritional value and type of delivery in the period from January to June.

In the first half of the year, the highest number of male newborns were admitted, with a total of 247; the average gestational age was 37.03 weeks; the most common nutritional value was appropriate for gestational age (AGA), with a total of 319; and the predominant type of delivery was cesarean section, with a total of 242.

Table 1: Characterization of the first semester (January-June) of the year 2023

Mes	Sexo		Edad gestacional Promedio (EG)	Valor nutricional (VN)	Tipo de Parto	
	Femenino (F)	Masculino (M)			Euctósico	Cesárea
Enero	32	36	34.95	AEG-43	26	42
	Total = 68			PEG-19		
				GEG-6		
Febrero	24	40	37	AEG-49	32	32
	Total= 64			PEG-12		
				GEG-3		
Marzo	32	47	37.9	AEG-61	38	41
	Total=79			PEG-6		
				GEG-6		
Abril	34	32	37.48	Hipotrófico moderado- 6	26	40
	Total=66			AEG-49		
				PEG-12		
Mayo	37	39	37.7	GEG-5	37	39
	Total=76			AEG-53		
				PEG-21		
Junio	45	53	37.2	GEG-2	50	48
	Total=98			AEG-70		
				PEG-23		
Total/ promedio	204	247	37.03	GEG-5	209	242
				AEG- 319		
				PEG- 93		
				GEG- 27		

The**TABLE 2**shows that in the second half of the year, males continued to be the most frequently admitted to the service, with a total of 336; the average gestational age was 37.7 weeks; 438 newborns were considered adequate for their gestational age; and the predominant type of delivery was euctotic.

Table 2: Characterization of the second semester (July-December) of the year 2023

Month	Sex		Average gestational age (GA)	Nutritional value (VN)	Type of Delivery	
	Female (F)	Male (M)			Euctotic	Caesarean section
Julio	31	58	37.6	AEG- 65	42	47
	Total=89			PEG-19		
				GEG-5		
Agosto	56	50	37.7	AEG-80	59	47
	Total=106			PEG-22		
				GEG-4		
Septiembre	38	69	37.7	AEG-77	56	51
	Total=107			PEG-26		
				GEG-4		
Octubre	71	61	37.6	AEG-75	69	63
	Total=132			PEG-28		
				GEG-1		
November	52	40	37.5	AEG-71	46	46
	Total=92			PEG-18		
				GEG-3		
December	43	58	38.3	AEG-70	52	47
	Total = 101			PEG-27		
				GEG-4		
TOTAL/AVG AVERAGE	291	336	37.7	AEG-438	324	301
				PEG-140		
				GEG-21		

Conducting a semester-by-semester analysis, taking these initial variables into account, the study showed that of the 1,078 admissions to the service throughout the year, 627 occurred in the second semester, indicating a greater number of births during this period. These statistics show that the average gestational age during this period is higher than during the January-June period. AGA neonates are the most

prevalent, despite an increase in the number of children considered SGA, with a total of 140 during the second period. Finally, it should be noted that, although cesarean deliveries predominated in the first half of the year and eutotic deliveries in the second half, at the end of the year the predominant type of delivery was cesarean, with a total of 543, ten times more than eutotic deliveries. Overall, there were more male admissions, with a total of 583, while 497 female patients were admitted.

The**TABLE 3**refers to the report, ventilation, major neonatal diseases, and deaths during the first half of the year. It shows that January was the month with the highest number of critically ill and ventilated patients during that period, with a total of 15 and 16 respectively; noninvasive ventilation was the most commonly used; low birth weight was among the main pathologies; and finally, there were six deaths.

Table 3: Characterization of the first semester (January-June) of 2023

Month	Report	Ventilated	Main neonatal diseases	Deceased
January	C-15	IMV-12	Underweight-8.	0
	G-1	SIMV-4	UTI; physiological jaundice; febrile syndrome; CIUR	
	DC-52			
February	C-8	IMV-3	Underweight-10.	1
	G-0	SIMV-4	UTI; SDR; jaundice; digestive dystrophy	
	DC-56			
March	C-13	IMV-6	Underweight-18	1
	G-63	SIMV-7	RDS; congenital heart disease; jaundice; neonatal infections; STI	
	DC-3			
April	C-9	IMV-6	Low weight-14.	3
	G-4	SIMV-4	CIUR; SDR	
	DC-53			
May	C-6	IMV-5	Low weight-22.	1
	G-1	SIMV-1	Severe hypertrophism; CIUR	
	DC-69	CMV-1		
June	C-13	IMV-10	Low weight-25	0
	G-2	SIMV-3	Pulmonary edema; asymptomatic polypotomy; icterus	
	DC-83			
TOTAL	C-64	IMV-42		6
	G-11	SIMV-23	Underweight: 97	
	DC-376	CMV-1		

The**TABLE 4**shows that in the second half of the year, the month with the highest number of critically ill patients was September, with 16, and the majority of ventilated patients were in July, with 16. Noninvasive ventilation continued to be the most commonly used. There was an increase in the number of patients considered underweight, with 148 throughout the entire period, and only one patient died.

Table 4: Characterization of the second semester (July-December) of the year 2023

Mes	Reporte	Ventilados	Principales Enfermedades Neonatales	Fallecidos
Julio	C-14	IMV-13	Bajo peso-23.	0
	G-3	SIMV-3	Oligoamnios severo; SFA; prolapso del cordón	
	DC-72			
Agosto	C-11	IMV-8	Bajo peso-20.	1
	G-2	SIMV-5	SDR; Infección; ictero fisiológico	
	DC- 93			
Septiembre	C- 16	IMV-10	Bajo peso-23.	0
	G- 5	SIMV-5	Infección neonatal, SDR;	
	DC- 86			
Octubre	C-10	IMV-10	Bajo peso-28.	0
	G-0	SIMV-2	CIUR; hipoglucemia	
	DC-122			
Noviembre	C-11	IMV-9	Bajo peso-27.	0
	G-3	SIMV- 5	SDR; CIUR	
	DC-78			
Diciembre	C-9	IMV- 6	Bajo peso-27.	0
	G-5	SIMV-2	Ictericia neonatal, hipoglucemia;	
	DC-87		SDR; CIUR	
TOTAL	C-71	IMV-56	Bajo peso: 148	1
	G-18	SIMV-22		
	DC- 538			

Considering the second variables studied for each stage of the year, the study showed that the highest number of deaths occurred in the first half of the year; noninvasive mechanical ventilation was the most commonly used; among the most common conditions affecting newborns were prematurity, physiological jaundice, respiratory distress syndrome (RDS), patients with intrauterine growth restriction (IUGR), and low birth weight (LBW), with a total of 245 deaths.

The research also revealed that the main risk factors for newborns becoming critically ill or severely ill included high blood pressure (HBP); diabetes mellitus; vaginal infections; maternal breech presentation; gestational age; premature rupture of membranes (PROM); and, most importantly, adolescence and prematurity.

The most common causes of cesarean sections were: previous cesarean section; failed induction; unquiet fetal state (UFS); severe oligohydramnios; severe preeclampsia; fetal macrosomia; risk of loss of fetal well-being (PRBF); sepsis due to premature rupture of the membrane; hyperglycemia; and twin cesarean sections, of which 24 occurred throughout the year.

Discussion

A study(5)carried out in 2020 that analyzed the risk factors for neonatal infection in 2016, at the Dr. Ernesto Guevara de la Serna General Teaching Hospital, in the province of Las Tunas, showed that the main causes of neonatal infection were urinary tract infections and vaginal discharge syndrome in mothers, as well as; gestational age and premature rupture of the membrane (PROM).

In the study conducted by Menéndez-Placeres et al.(6), it was demonstrated that the maternal risk factors related to the diagnosis of clinical sepsis were urinary tract infection/vaginosis with 36.4%, followed by premature rupture of membranes with 14%. Both studies agree with the present investigation since it

demonstrated that among the main pathologies of those patients admitted to the service was neonatal infection and that some of the main risk factors were PROM; vaginal infections and gestational age.

The Ramos-Canevaro study⁽⁷⁾ identified that the main causes of neonatal mortality in the NICU were: hyaline membrane disease, neonatal sepsis, heart disease, amniotic fluid aspiration syndrome, severe depression, and hyperbilirubinemia. Neonatal morbidity and mortality in the NICU of the Augusto Hernández Mendoza Hospital in 2018-2019 are mainly related to low birth weight and premature births. Unlike the present study, amniotic fluid aspiration, severe depression, and hyperbilirubinemia were not causes of neonatal death; neonatal sepsis, low birth weight, and prematurity were; causes that were associated with factors such as gestational hypertension, signs of preeclampsia, and adolescence.

Prematurity is one of the most important health problems in society, especially in the most industrialized; despite this, there are differences in morbidity and mortality in newborns (NB) at different times within the five-week gestation interval, classically considered full-term birth.⁽⁸⁾ In 2005, the World Health Organization (WHO) published a new classification of pregnancies based on the weeks of amenorrhea, which resulted in four categories: late preterm neonates, who are born between weeks 34.0 and 36.6, and early term neonates, who are born between weeks 37.0 and 38.6.⁽⁹⁾ Taking this data into account, the study by Torres Muñoz et al.⁽¹⁰⁾ showed that late-term newborns had a higher risk of low birth weight than early-term newborns, accounting for 61.5% of the total, which was also evident in this research. Premature births were the main cause of low birth weight in the hospital, and the main causes were PROM, gestational hypertension, history of premature births, twin pregnancies, and extreme ages, taking into account that those under 16 years of age and over 35 years of age have a higher risk of having preterm births.

Due to their high incidence, neonatal jaundice and hyperbilirubinemia are considered priority diseases. A study⁽¹¹⁾ conducted in Ecuador reported that the incidence of neonatal jaundice and hyperbilirubinemia, based on sex, was more prevalent in males. At the hospital where the study was conducted, jaundice was found to be the main reason for lengthy stays for newborns, both in the NICU if associated with another illness or with signs of severity, and in the postpartum wards where the mothers were present. However, neither of these conditions was specifically associated with one sex or the other.

Previous articles⁽¹²⁾, ⁽¹³⁾ have shown that pregnant adolescents have a high risk of developing gestational hypertensive disease due to the young age of the mother, which represents a high risk to the life of the mother and the fetus; which is related to preterm birth, neurological disorders such as seizures, metabolic disorders of the fetus, intrauterine growth retardation, gestational bleeding, placental insufficiency, puerperal complications, maternal death and fetal death.

Low birth weight is among the most common complications in newborns of adolescent mothers. This factor is, worldwide and in certain population groups, the most important factor in determining the newborn's chances of survival and healthy growth. It constitutes one of the main current obstetric problems, present in 6% to 7% of births, and is related to more than 75% of perinatal mortality. The younger the woman, the more likely she is to have premature or low-weight babies, with the resulting increased neonatal morbidity and mortality. Biological immaturity may explain these adverse outcomes, which is relevant to the present study, since adolescence was one of the main risk factors for some of the newborns reported to be critically ill and severely ill and who were found to be underweight.⁽¹²⁾

The definitive treatment for hypertensive disorders associated with pregnancy, and especially for preeclampsia and its more severe presentations (HELLP and eclampsia), is delivery of the placenta. The timing of delivery is defined by analyzing the risks of prematurity for the fetus and the maternal risk of continuing the pregnancy.⁽¹³⁾ This is consistent with the present study. It is considered protocol that most mothers with hypertension undergo termination of pregnancy around 37 weeks; this decision is not made if the pregnant woman goes into labor early; however, considering the consequences for the mother and baby, the procedure is carried out at the Abel Santamaría Cuadrado Hospital in Pinar del Río province as previously stated. Termination of pregnancy in mild preeclampsia and gestational hypertension with antihypertensive treatment or with visceral symptoms and signs will be at week 37; if fetal lung maturation is in doubt, a betamethasone regimen will be considered. In severe preeclampsia before 33 weeks, treatment will be based on the conditions requiring immediate delivery with prior fetal lung maturation. Pregnant women with chronic arterial hypertension with superimposed preeclampsia in preterm pregnancy will be managed in the same manner as preeclampsia. Chronic hypertension associated with pregnancy will be discontinued at week 39 and at week 37 if signs of decompensation appear. In the case of severe decompensation at 34 weeks or more, termination of pregnancy will be considered. It should be noted that altered uterine artery flow, premature placental maturation, and a fetal growth curve in the risk percentiles or SGA are factors that are more conducive to termination of pregnancy.

In preterm newborns with low birth weight, the use of endotracheal intubation is necessary. Prolonged mechanical ventilation and the constant aspiration of bronchial secretions, combined with the newborn's pulmonary immaturity, frequently lead to respiratory infections. The prolonged use of intensive care treatments and techniques can lead to systemic infections.⁽¹⁴⁾

The different strategies of oxygen therapy and ventilatory support used in preterm newborns, favor ventilation and alveolar oxygenation, decrease pulmonary overdistension, with less need for ventilatory support that induces muscular dysfunction, sedoanalgesia, better gas exchange, less fluctuation in blood pressure, decreases the risk of volutrauma, facilitates muscle training, shortens the duration of invasive ventilation and facilitates weaning; the above with the objective of improving the clinical of patients and maintaining hemodynamic stability; this article also demonstrated that once the release of invasive or noninvasive mechanical ventilation was carried out, the oxygen therapy strategy established in patients was the conventional nasal cannula;⁽¹⁵⁾ that is why noninvasive mechanical ventilation is the most used in the Neonatal Intensive Care Services of the Abel Santamaría Cuadrado Hospital in the province of Pinar del Río, as demonstrated in the present investigation.

The results of the study make it necessary to update care and action protocols for the main morbidities faced by pregnant women, postpartum women, and newborns. Therefore, it is vitally important to implement research on the topic to prevent an increase in NICU admissions and, consequently, the causes of death associated with preventable or controllable risk factors.

Conclusions

The study ultimately revealed that the largest number of admissions during the year were male. The average gestational age for the year was 37.3 weeks; the lowest was in January, despite not being the month with the fewest births. The month with the highest number of births was October. Respiratory distress syndrome, physiological jaundice, and low birth weight were the most common conditions, mostly associated with high blood pressure; prematurity; adolescence; and premature rupture of the membranes

as the main risk factors.

AUTHORSHIP CONTRIBUTION

APM: conceptualization, writing – initial draft, writing – review and editing

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

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BIBLIOGRAPHIC REFERENCES

- (1) IAWG [Internet]. New York: Inter-Agency Working Group; 2020 [accessed 10 December 2024]. Newborn Health: Epidemiology. Available at: <https://newbornfieldguide.com/chapters/2/2-newborn-health-epidemiology/>
- (2) Amador Morán R. The importance of the clinical method in neonatology. *Rev Cubana Pediatr* [Internet]. 2019 [cited 10 Dec 2024];91(4):[approx. 14 p.]. Available at: <https://revpediatria.sld.cu/index.php/ped/article/view/796/461>
- (3) SWI swissinfo.ch [Internet]. Switzerland: Swiss Broadcasting Corporation SRG SSR; 2024 [cited 10 Dec 2024]. Cuba closed 2023 with an infant mortality rate of 7.1 per 1,000 live births. Available at: [https://www.swissinfo.ch/spa/cuba-cerr%C3%B3-2023-con-una-mortalidad-infantil-de-7-1-por-cada-1-000-nacidos-vivos/49098130#:~:text=Quinta%20Suiza-,Cuba%20cerr%C3%B3%202023%20con%20una%20mortalidad%20infantil%20de%207,por%20cada%201.000%20nacidos%20vivos&text=La%20Habana%2C%203%20ene%20\(EFE\)](https://www.swissinfo.ch/spa/cuba-cerr%C3%B3-2023-con-una-mortalidad-infantil-de-7-1-por-cada-1-000-nacidos-vivos/49098130#:~:text=Quinta%20Suiza-,Cuba%20cerr%C3%B3%202023%20con%20una%20mortalidad%20infantil%20de%207,por%20cada%201.000%20nacidos%20vivos&text=La%20Habana%2C%203%20ene%20(EFE))
- (4) Rodríguez Carballo Y, Álvarez Pineda A, Castillo Rodríguez A, López González EC, Rodríguez Rubio N, Río Alonso O del. Clinical, microbiological, and epidemiological characterization of neonates with healthcare-associated infections. *Rev Cubana Pediatr* [Internet]. 2016 [cited 10 Dec 2024];88(2):[approx. 10 p.]. Available from: <https://revpediatria.sld.cu/index.php/ped/article/view/107/40>
- (5) Guerrero Cruz A, Fernández Chacón A, González Lorenzo RJ, Machado Díaz MA, Pequeño Rondón MM. Risk factors for early neonatal infection in patients treated at a general hospital. *Rev Electrón Zoilo* [Internet]. 2020 [cited 10 Dec 2024];45(2):[approx. 7 p.]. Available from: https://revzoilomarinello.sld.cu/index.php/zmv/article/view/2018/pdf_668
- (6) Menéndez-Placeres Iluminada, Rodríguez-Heredia Odalys Irmira, Martín-Díaz Geidy, Navarro-Vega Néstor, Rodríguez-Aguirre Emirelys Yusmara, Jacob-Pérez Yunaika. Characterization of the infection associated with health care in the Neonatology of the provincial maternity hospital. *Arch méd Camagüey* [Internet]. 2023[cited 2024 Dec 10];27:..Available at: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1025-02552023000100051&lng=es.Epub02-Ago-2023.
- (7) Ramos Canevaro ME. Neonatal morbidity and mortality in the Neonatal ICU of the “Augusto Hernández Mendoza” Hospital, 2018–2019 [Internet]. Ica, Peru: National University “San Luis Gonzaga”. Faculty of Human Medicine “Dr. Daniel Alcides Carrión García”; 2021 [cited 10 Dec 2024]. Available at: <https://repositorio.unica.edu.pe/server/api/core/bitstreams/05a10ff8-a87e-46fb-a10f-e7ac32f2fffe/content>

- (8) Mederos Herrera AM. Characterization of the late preterm and early term neonate. *Acta méd centro* [Internet]. 2023 [cited 10 Dec 2024];17(2):310-20. Available at: <http://scielo.sld.cu/pdf/amdc/v17n2/2709-7927-amdc-17-02-310.pdf>
- (9) Osredkar D, Verdenik I, Gergeli AT, Gersak K, Lucovnik M. Apgar score and risk of cerebral palsy in preterm infants: a population-based cohort study. *Neuropediatr* [Internet]. 2021 [cited 10 Dec 2024];52(4):310-5. Available at: <https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0041-1729181>
- (10) Torres Muñoz J, Jiménez Fernández CA, Ortega RR, Marin Cuero DJ, Mendoza DM. Factors Associated With Late Prematurity in the University Hospital of Valle Cali, Colombia During 2013–2014. *Front Public Health* [Internet]. 2020 [cited 10 Dec 2024];8(200):[approx. 7 p.]. Available at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC7366421/pdf/fpubh-08-00200.pdf>
- (11) Sarmiento Orellana NP, Ortiz Tejador JG. Characterization of neonatal jaundice and associated factors in newborns. *Cienc Lat* [Internet]. 2024 [cited 10 Dec 2024];8(4):1198-214. Available from: <https://www.ciencialatina.org/index.php/cienciala/article/view/12351/17922>
- (12) Figueroa-Oliva DA, Negrin-Garcia VA, Garcell-Fernández ET. Risks and complications associated with teenage pregnancy. *Rev Cienc Méd Pinar Rio* [Internet]. 2021 [cited 10 Dec 2024];25(5):[approx. 14 p.]. Available from: <https://revcmpinar.sld.cu/index.php/publicaciones/article/view/5051/pdf>
- (13) Miranda Ferragut L, Casas Gutiérrez MV, Suarez García N, Portal Miranda ME, Gutiérrez Marante D. Morbidity and mortality in newborns of adolescent mothers. *Univ Méd Pinareña* [Internet]. 2022 [cited 10 Dec 2024];18(4):[approx. 2 p.]. Available from: <https://revgaleno.sld.cu/index.php/ump/article/view/921/pdf>
- (14) Ortega Agustino AJ, Rodríguez Castro T, Donet Díaz D, Pozo Nistal Y, González Herrera DR, Cantero Rodríguez I. Clinical and epidemiological characterization of low birth weight neonates with late-onset sepsis. *Mediciego* [Internet]. 2023 [cited 10 Dec 2024];29(1):3608-25. Available from: <https://revmediciego.sld.cu/index.php/mediciego/article/view/3608/3989>
- (15) Valero-Ortiz AS, Roa-Cubaque MA, Corredor-Gamba SP, Rojas-Laverde MP, Chaparro-Cristancho LP, Ibáñez-Torres LJ. Oxygen therapy and ventilatory support strategies in neonatal intensive care after pulmonary surfactant administration. 2023 [accessed December 10, 2024]; Available from: <https://revistas.udenar.edu.co/index.php/usalud/article/view/6458/9627>

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