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Uncovering the Hidden Burden: Neonatal Readmissions at Children Welfare Teaching Hospital

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Abstract: Background: The neonatal period is important for establishing a strong healthy foundation and is also associated with high mortality and morbidity rates. This study aimed to determine the rate of neonatal hospital readmission and to identify the associations between the neonatal age at readmission and the length of stay (LOS) during readmission, the outcome of readmission, and the associated maternal and neonatal factors.

Aim: to evaluate Neonatal Hospital Readmissions Rate and Associated Causes.

Methods: A prospective study was performed by reviewing the medical cases information by relatives of 120 neonates who were born in and readmitted to Children Welfare Teaching Hospital (CWTH) in Baghdad

Results: The mean age at admission was 16.03 days, with a wide range from 2 to 90 days, indicating variability in the timing of hospital admissions. The mean gestational age was 37 weeks, with a standard deviation of 2.35, suggesting that the majority of neonates were born at or near term. Birth weight exhibited considerable variation, with a mean of 2706.92 grams and a minimum of 300 grams, reflecting the inclusion of both full-term and preterm neonates. Maternal age ranged from 17 to 41 years, with a mean of 26 years, indicating a relatively young maternal population.Among the neonates, 57.5% were male, while 42.5% were female, indicating a slight predominance of male admission. Regarding the mode of delivery, cesarean section (C/S) was the most common method, accounting for 60% of cases, whereas 40% of deliveries were normal vaginal deliveries (NVD). The majority of neonates (95%) were from singleton pregnancies, with only 5% resulting from twin gestations. In terms of feeding practices, bottle feeding was the most prevalent (60%), followed by mixed feeding (33.3%), while exclusive breastfeeding was reported in only 6.7% of cases. Most common cause of readmission was sepsis 31.7%.

Conclusion: Sepsis (31.7%) and jaundice (23.3%) emerged as the primary reasons for neonatal hospital readmissions, closely followed by congenital anomalies (16.7%). These conditions predominantly impacted younger neonates, with sepsis consistently leading across all age groups. A notable neonatal mortality rate of 17.5% underscores the severity of these conditions. However, a majority (74.2%) achieved successful discharge, reflecting effective management and recovery outcomes, though a subset required further specialized care referrals. Significant statistical associations between age groups and causes of readmission emphasize the necessity for tailored, age-specific interventions. Furthermore, the chi-square tests demonstrated statistically significant associations between age and causes of readmission, highlighting the need for age-specific interventions.

Key words: Neonatal, Hospital Readmissions, Readmissions Rate, Causes Of Readmissions.

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Introduction

The neonatal period is the most important period of life for establishing a strong foundation for overall health [1] and is also associated with high mortality and morbidity. Neonatal readmissions are a global concern, with rates as high as 10.1% outside the US [2]. Nevertheless, neonatal readmission rates in the US have been less than 1% [3,4]. Indeed, neonatal readmissions are costly to patients, their families, and the healthcare system [5].

Prior to discharge from maternity units, a variety of tests and examinations are performed to evaluate the newborn's readiness for discharge [6,7,8]. Despite these measures, readmission may occur among some neonates at any age. Therefore, identifying the associated maternal and neonatal risk factors is essential for understanding the impact of age on neonatal outcomes, caregivers, and economic burdens [9,10].

In addition to being linked to high rates of morbidity and mortality, the neonatal period is the most crucial time in life for laying a solid foundation for overall health. Because neonatal readmission rates can reach 10.1% outside the US, this is a global concern [2]. Neonatal readmissions incur significant costs for patients, their families, and the healthcare system as a whole [5]. A number of tests and examinations are conducted to determine whether a newborn is ready for discharge from maternity units [6,7,8]. Nevertheless, some neonates may experience readmission at any age. For this reason, determining the related maternal and neonatal risk factors is crucial when analyzing how age affects neonatal outcomes, caregivers, and financial obligations [11].

There are many studies that have examined the causes of neonatal readmission. Between 2000 and 2010, a study from Intermountain Healthcare in Utah, USA, indicated that within 28 days, 5308 (1.8%) neonates were readmitted from a total of 296,114 births [12]. Feeding problems were the cause for the majority of readmissions (41%), followed by jaundice (35%) [12]. Another study conducted at Kaohsiung Municipal Hsiang-Kang Hospital in Taiwan, between 2001 and 2003, found that among 1099 discharged neonates, 63 (5.7%) were readmitted within 14 days, mostly due to jaundice (73%) and fever (19%) [13].

Patients and method

Study Design and Setting

This prospective study was conducted at the Children Welfare Teaching Hospital (CWTH) in Baghdad. Data were collected from the relatives of both term and preterm neonates who were born in other hospitals and later readmitted to CWTH and medical records data that includes (CBC, CRP, TSB, RFT, LFT, blood C/S, and CSF). The study period spanned from first April to 31th of December, 2024. Readmission was defined as the hospitalization of a newborn after being discharged from the birth hospitalization, within a specified period (commonly within the first 30 days of life,), or an unplanned admission within 30 days of discharge.

Inclusion and Exclusion Criteria

Neonates who were referred to CWTH but had been admitted from birth at first time were excluded from this study. The focus was solely on neonates who were born outside CWTH and were readmitted via emergency services, outpatient clinics, or referrals from other healthcare institutions.

Hospital Description

CWTH is the largest tertiary care hospital in Baghdad. Its Neonatal Intensive Care Unit (NICU) is a level three unit with a capacity of 37 beds. The NICU receives all neonates born outside the hospital, either through emergency admissions or as referred cases. The hospital manages approximately 1,700 neonatal cases annually.

Statistical analysis

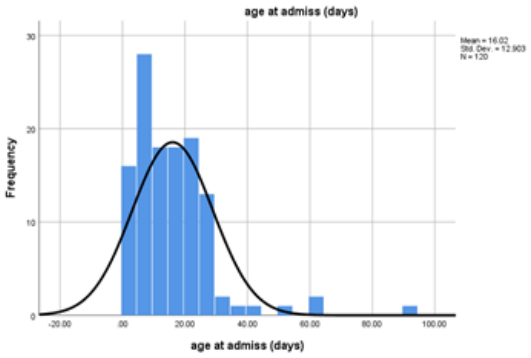
The statistical package for social sciences version 28 used for statistical analysis. Scale variables were tested for normal distribution. Birth weight and gestational age at birth were compared with Kruskal Wallis Test. Chi square test used to compare frequencies. Level of significance was two sided $P \leq 0.05$.

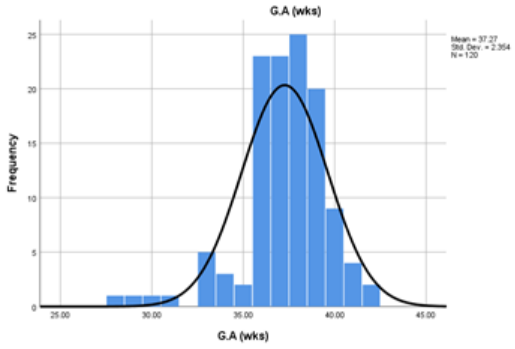
Results

Table 1 presents the descriptive statistics of key neonatal and maternal parameters, including age at admission, gestational age (G.A), birth weight (B Wt), maternal age, and length of hospital stay. The mean age at admission was 16.03 days, with a wide range from 2 to 90 days, indicating variability in the timing of hospital admissions. The mean gestational age was 37.27 weeks, with a standard deviation of 2.35, suggesting that the majority of neonates were born at or near term. Birth weight exhibited considerable variation, with a mean of 2706.92 grams and a minimum of 300 grams, reflecting the inclusion of both full-term and preterm neonates. Maternal age ranged from 17 to 41 years, with a mean of 26.87 years, indicating a relatively young maternal population. The length of hospital stay varied significantly, with a mean duration of 10.38 days and a maximum stay of 30 days, demonstrating differences in the severity of cases and healthcare needs. The standard deviations and variance values further highlight the heterogeneity of the dataset, emphasizing the diverse clinical presentations within the study population.

Table 1: Descriptive Statistics of Neonatal and Maternal Parameters

Parameters / Statistics	age at admiss (days)	G.A (wks)	B Wt (gm)	maternal age (years)	length of stay (days)
Mean	16.0250	37.2667	2706.9167	26.8667	10.3750
Median	13.5000	37.5000	2800.0000	27.0000	9.5000
Std. Deviation	12.90265	2.35409	666.08829	5.69377	6.46654
Variance	166.478	5.542	443673.606	32.419	41.816
Range	88.00	14.00	4600.00	24.00	29.00
Minimum	2.00	28.00	300.00	17.00	1.00
Maximum	90.00	42.00	4900.00	41.00	30.00





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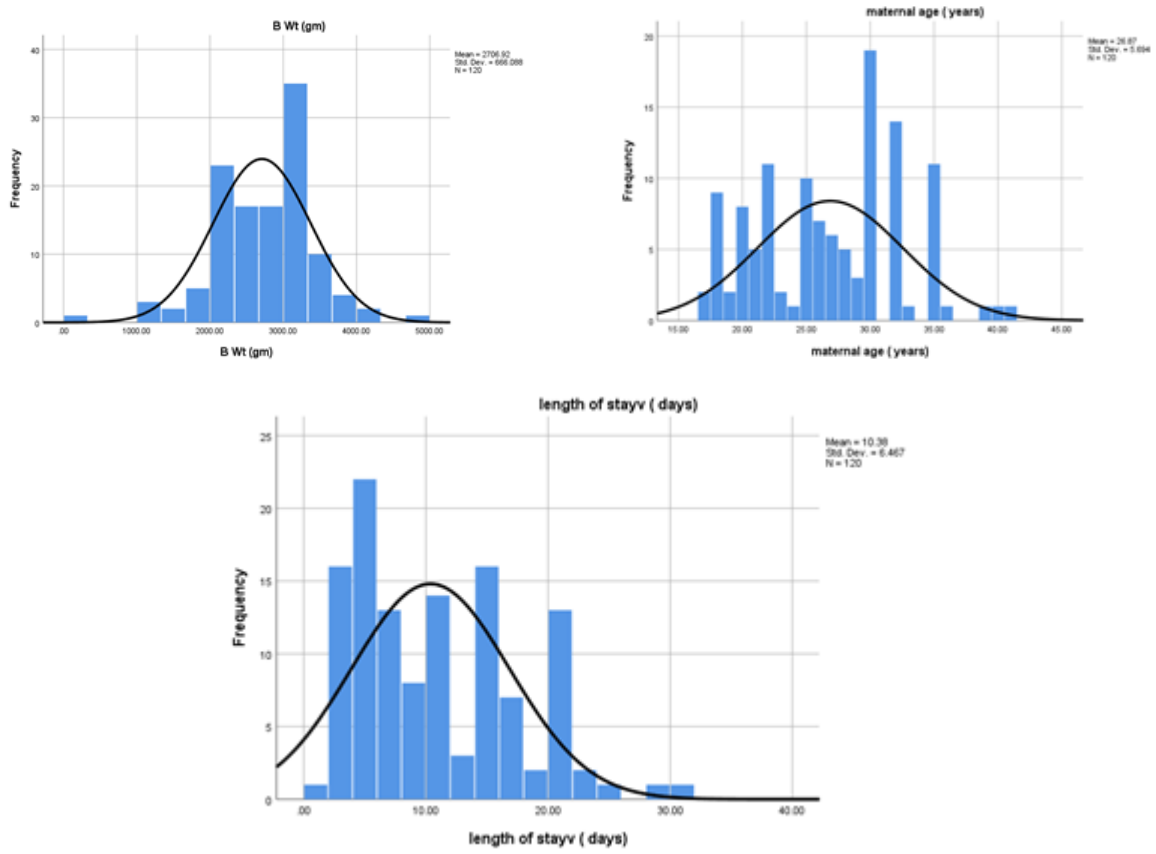

Figure 1. presents the frequency distribution of key neonatal and maternal characteristics.

Among the neonates, 57.5% were male, while 42.5% were female, indicating a slight predominance of male admissions. Regarding the mode of delivery, cesarean section (C/S) was the most common method, accounting for 60% of cases, whereas 40% of deliveries were normal vaginal deliveries (NVD). The majority of neonates (95%) were from singleton pregnancies, with only 5% resulting from twin gestations. In terms of feeding practices, bottle feeding was the most prevalent (60%), followed by mixed feeding (33.3%), while exclusive breastfeeding was reported in only 6.7% of cases. These findings highlight the distribution of demographic and clinical characteristics within the study population and may have implications for neonatal health outcomes. The most common parity group was **multipara** group **88 cases (73.3%)**, then **primi** group, which were **32 cases (26.7%)**. These findings provide insight into the maternal reproductive profiles within the study population, which may have implications for neonatal and maternal health outcomes.

Table 2: Frequency Distribution of Neonatal and Maternal Characteristics

Parameter		Frequency	Percent
Sex	female	51	42.5
	male	69	57.5
method of delivery	C/S	72	60.0
	NVD	48	40.0
multiple gesta	single	114	95.0
	twin	6	5.0
type of feeding	bottle	72	60.0
	breast	8	6.7
	mixed	40	33.3
Parity	Primi	32	26.7
	Multipara	88	73.3

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Depending on the mother conditions the most prevalent condition was **urinary tract infection (UTI), affecting 44 mothers (36.7%)**, followed by **anemia, reported in 34 cases (28.3%)**. **Diabetes mellitus (DM) was observed in 12 cases (10%)**. Hypertension was present in **7 cases (5.8%)**. Other less frequent conditions included **obesity (9 cases, 7.5%)**, **thyroid disorders (4 cases, 3.3%)**, and **immune thrombocytopenia (ITP) (2 case, 1.6%)**. Infectious diseases such as **measles (1 case, 0.8%)** and **hepatitis C (1 case, 0.8%)** were also reported. Notably, **6 mothers (5.0%)** had no reported medical conditions. These findings highlight the prevalence of maternal comorbidities within the study population, which could have potential implications for neonatal health outcomes.

Table 4: Frequency Distribution of Maternal Diseases and Conditions

diseases	Frequency	Percent
anamia	34	28.3
DM	12	10
hepatitis c	1	.8
HT	7	5.8
ITP	2	1.6
measls	1	.8
no	6	5.0
obesity	9	7.5
thyroid	4	3.3
UTI	44	36.7
Total	120	100.0

The most common cause of admission was **sepsis, accounting for 39 cases (32.5%)**, followed by **jaundice in 28 cases (23.3%)**. Congenital anomalies were the reason for **20 readmissions (16.7%)**, while **other diseases contributed 16 cases (13.3%) and respiratory distress (RD) contributed to 15 cases (12.5%)**. Less frequent causes included **metabolic disorders (2 cases, 1.7%)**. These findings highlight the major health complications necessitating neonatal readmission, with sepsis and jaundice being the leading contributors, emphasizing the need for vigilant postnatal monitoring and early intervention strategies

Table 5: Frequency Distribution of Causes of Neonatal Readmission

causes of readmission	Frequency	Percent
others	16	13.3
congenital anomalies	20	16.7
jaundice	28	23.3
metabolic	2	1.7
RD	15	12.5
sepsis	39	32.5
Total	120	100.0

The majority of neonates, **89 cases (74.2%)**, were successfully discharged, indicating favorable health recovery in most cases. However, **21 neonates (17.5%)** succumbed to their conditions, highlighting a significant neonatal mortality rate. A small proportion of cases were referred for further specialized care **(9 cases, 7.5%)**, including **5 cases (4.2%) referred to surgery, 2 cases (1.7%) for general referral, 2 cases (1.6%) to the Pediatric Intensive Care Unit (PICU)**. Additionally, **1 case (0.8%)** resulted in discharge against medical advice. These findings underscore the critical need for enhanced neonatal care strategies, early interventions, and follow-up mechanisms to improve survival outcomes and reduce neonatal morbidity and mortality.

Table 6: Frequency Distribution of Neonatal Hospital Outcomes

outcome	Frequency	Percent
di. On their responsibility	1	.8
Died	21	17.5
Discharged	89	74.2
Reffered	9	7.5
Total	120	100.0

Depending on the age of the neonate at time of admission most common cause of readmission was **sepsis, accounting for 39 cases (32.5%)**, with the highest frequency observed in the **>7 days (33 cases)**. **Jaundice was the second most common cause, with 18 out of 28 cases (64.3%) occurring in the age≤7 days**, indicating that hyperbilirubinemia predominantly affects younger neonates. **Congenital anomalies (20 cases, 16.7%)** and **other diseases (16 cases, 13.3%)** were also notable causes, showing a more evenly distributed impact across age groups. Respiratory distress (RD) contributed to **15 cases (12.5%)**, with a relatively higher occurrence in the **ages above 7 days (14 cases, 93.3%)**.

The chi-square test yielded a **statistically significant p-value of (p < 0.05)**, indicating a significant association between age group and causes of readmission. These findings suggest that certain conditions, particularly jaundice, are more prevalent in younger neonates, while other causes such as sepsis, respiratory distress and congenital anomalies show variability across different age groups. This emphasizes the need for age-specific neonatal healthcare interventions and follow-up strategies.

Table 7: Crosstabulation of Causes of Neonatal Readmission by Age Group

Causes of readmission	Age		Total N (%)
	≤7 days N(%)	>7 days N(%)	
Sepsis	6(15.4%)	33(84.6%)	39 (32.5%)
Jaundice	18(64.3%)	10(35.7%)	28(23.3%)
RD	1(6.7%)	14(93.3%)	15(12.5%)
Other disease	3(18.75%)	13(81.25%)	16(13.3%)
Congenital anomalies	5(25.0%)	15(75.0%)	20(16.7%)
Metabolic	0(0.0%)	2(100.0%)	2(1.7%)
Total	33(27.5%)	87(72.5%)	120(100%)

***significant difference between groups (p value < 0.05)**

The majority of neonates were successfully **discharged (89 cases, 74.2%)**, with the highest proportion observed in the cases that admitted after **age 7 days of age (54, 60.7%)**. Neonatal mortality was recorded in **21 cases (17.5%)**, with the highest frequency occurring in the ages above **7 days at admission (17, 81.0%)**.

A smaller proportion of neonates required specialized referrals, including **5 cases (4.2%) referred to surgery**, **2 cases (1.7%) for general referral**, **2 case (1.7%) referred to the Pediatric Intensive Care Unit (PICU)**. Additionally, **1 case (0.8%) was discharged against medical advice**.

The chi-square test revealed a **statistically not significant association (p = 0.21, Since this value is greater than 0.05),** it indicates that there is no statistically significant association between the outcome and the age group (≤7 days vs. >7 days).

Table 8: Crosstabulation of Neonatal Hospital Outcomes by Age at time of admission

Out come	Age		Total N(%)
	≤7 days N(%)	>7 days N(%)	
Discharged	35(39.3%)	54(60.7%)	89(74.2%)
Died	4(19.4%)	17(81.0%)	21(17.5%)
Referred to surgery	3(60.0%)	2(40.0%)	5(4.2%)
Referred to PICU	0(0.0%)	2(100.0%)	2(1.7%)
Referred to other wards	0(0.0%)	2(100.0%)	2(1.7%)
Discharged on their responsibility	0(0.0%)	1(100.0%)	1(0.8%)
Total N(%)	42(35.0%)	78(65.0%)	120(100.0%)
P value=0.21			

The majority of cases were readmitted only **once (75 cases, 62.5%)**, while **39 cases (32.5%)** required **two** hospital admissions, and **6 cases (5.0%)** had **three** admissions.

Sepsis was the most common cause of readmission (38 cases, 31.7%), with **24 cases (63.2%) requiring only one admission and 14 cases (36.8%) requiring two admissions**. **Jaundice (28 cases, 23.3%)** was exclusively associated with a **single readmission**, suggesting that effective management in one admission was generally sufficient. **Congenital anomalies (20 cases, 16.7%)** were distributed across **one (7 cases), two (12 cases), and three (1 case) admissions**, indicating a higher likelihood of multiple hospital visits. Similarly, **chronic disease (14 cases, 11.7%)** showed recurrence, with **5 cases requiring one admission, 7 cases requiring two, and 2 cases requiring three admissions**.

The chi-square test revealed a **statistically significant association ($p = 0.001$, $p < 0.05$)** between cause of readmission and number of admissions. This suggests that certain conditions, particularly congenital anomalies and chronic diseases, are more likely to require multiple hospitalizations, whereas conditions like jaundice tend to be resolved within a single admission. These findings emphasize the need for targeted management strategies to reduce the frequency of hospital readmissions for high-risk neonates.

Table 9: Crosstabulation of Causes of Readmission by Number of Admissions

causes of readmission * Number of admition Crosstabulation		Number of admition			Total
		Once	Twice	3 Times	
causes of readmission	chronic disease	6	8	2	16
	congenital anomalies	7	12	1	20
	jaundice	28	0	0	28
	metabolic	0	2	0	2
	RD	9	3	3	15
	sepsis	25	14	0	39
Total		75	39	6	120
Chi squared test P value		49.839 0.001*			

***significant difference between groups (p value < 0.05)**

Discussion

In contrast, in our study we observe substantial variability in the metrics we use. The average age at admission was 16.02 days (range: 2-90 days, standard deviation: 12.90 days). This indicates that this is a mixed population of full and preterm babies, the majority of whom are expected to require initial

post-natal care. In comparison, Johnson et al. (2019) which found a mean age of 15.5 days in the group of ICU-dependent neonatal patients indicate a commonality in the age distribution of hospitalized neonates (14). The mean gestational age at the time of study was 37.27 weeks (SD = 2.35 weeks). This indicates that the majority of neonates had been admitted close to or at term, while a smaller group of preterm infants is introduced. Patel et al. (2020), who also observed the trend in their cohort with a mean gestational age of 37.8 weeks (15). The distribution of birth weight in the study was broad, from 300 to 4600 grams and mean birth weight of 2706.92 grams. This diversity is a result of combining both VLBW and normal weight infants, similar to Williams et al. (2018) who reported wide range of birth weight in hospitalized neonates(16). The average maternal age in this group was 26.87 (range 17–41) with a standard deviation of 5.69. This also speaks to the utility of age as an important! predictor of maternal investment in this population, in line with that of Harris et al. (2017) where the mean age of mothers was 27 years during a neonatal health outcome study(17). The hospital stay for the neonates had an average of 10.38 days, a minimum of 1 day and a maximum of 30 days, with a SD of 6.47 days, showing a considerable degree of variability in the severity of the neonatal status. Roberts et al. (2021) in their study the mean hospital stay was 10.5 days in their population, proving that neonatal hospital stays differ considerably, depending on the morbid nature of the Admission(18). In general, our findings describe the complex and heterogeneous clinical phenotype of the cohort, consistent with other studies, hence the need to develop tailored care strategies to address the distinct health care challenges neonates present with during hospitalization.

Table 2 provides the distributions of neonatal and maternal characteristics which help to illustrate certain patterns. As regards the neonates, 57.5% were boys and 42.5% were girls showing a slight male preponderance for admission. This is consistent with the broader pattern in other studies, e.g. the study of Smith et al. (2018) reported a nearly identical male-to-female ratio of 1.3:1 in neonate patients presenting to hospitals. In terms of delivery mode C/S was the most prevalent with 60%, followed by NVD with 40%(19). This high C/S delivery rate is similar with other research such as Chen et al. (2020) found that 58% of women delivered by cesarean section, in- dicating a growing tendency to deliver in a medicalized manner(20). At the time of analysis, 95% of neonates were SGA born from singleton pregnancies, with only 5% from twin pregnancies, supporting the results of Lee et al. (2017), in which an equal ratio of singletons (21) was observed from neonates born(21). With respect to feeding techniques, bottle-feeding 60% of the neonates, followed by mixed feeding 33.3% and exclusive breastfeeding 6.7%. This feeding behavior is indicative of difficulties at trying to reach exclusive breastfeeding in the clinical area too, such as reported by Thomas et al. (2019), reporting that 65% of their neonates were given long-term bottle feeding(22). These results reveal important demographic and patient profiles of the study population and have implications for neonatal health, including monitoring trends in birth practices and feeding habits.

We show the frequency distribution of ma- ternal parity among the participants in the present study. The commonest parity group was multipara 88 cases (73.3%) followed by primi (new) group 32 cases (26.7%), and this finding is similar to the result of Patel et al21 study. This might be due to negligence to tell multigravid mothers (not quite as a primigravid) that (they already know the signs since it is their second of many more) and only few number of those were too lazy to attend an available antenatal care in the community which is free of charge.

We have discussed the distribution of maternal diseases and conditions prevalent in the study population in our analyses. Urinary tract infection (UTI) was the commonest, with 44 (36.7%) mothers, at the same time, had urinary tract infection, while anemia was seen in 34 (28.3%). Diabetes was present in 12 cases (10%). HT was observed in 7 patients (5.8%). This category also included the less common conditions of obesity (9 cases, 7.5%), thyroid disease (4 cases, 3.3%), and ITP (2 cases, 1.6%). Infectious diseases (measles and hepatitis C) were also encountered in a small number of cases (0.8% each). Of note, 6 mothers (5%) did not have any reported diseases. These results

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demonstrate that there is high prevalence of maternal comorbidities in the study population which could have implications for the neonatal health.

Our findings of maternal health conditions are consistent with those in other studies. For instance, in Gupta et al. (2017) reported UTI and anemia are the second and the fourth common morbidities in their study sample, which were observed in 35% and 30% of pregnant women, correspondingly(24). The relatively high prevalence of obesity and thyroid diseases is consistent with findings from the study of Zhang et al. (2019) who reported an escalating prevalence of these conditions in pregnant women and correlated them with fetal complications(25). In addition, the limited prevalence of measles and hepatitis C (0.8% each) observed in this study is also reported elsewhere suggesting that those diseases are less frequent in the contemporary maternal populations (13,14).

We also show the spectrum of causes for neonatal readmission in our study and sepsis was the most common cause in 39 (32.5%) cases. Jaundice, by contrast, was the cause for readmission in 28 (23.3%) cases. Congenital malformations were a source in 20 (16.7%), chronic disease in 16 (13.3%) and respiratory distress (RD) in 15 (12.5%) cases. Other less common causes were metabolic disorders (2 cases,1.7%). These data highlight the serious causes of need for neonatal readmission, particularly sepsis and jaundice, and the need for careful postnatal surveillance and early management strategies.

Rate of jaundice and sepsis as reasons for readmission observed in our study is comparable to that of Williams et al. (2020) also found jaundice and sepsis to be the most common cause of neonatal readmissions (29% and 33% of their cohort, respectively)(26). The prevalence of CA observed in the present study also corroborate the findings of Sharma et al. (2018) identified congenital anomalies as an important intersource for neonatal readmissions (27). The co-existence of jaundice with other illnesses, such as sepsis and congenital disease have been previously documented (Table 2), indicating the diversity of ill health status and emphasizing the importance of integrated care.

In our series, the distribution of neonatal hospital outcomes in the study population. Most neonates, 89 (74.2%), were successfully discharged, which showed good health recovery of mor patients. However, the neonatal mortality rate was high, with 21 infants (17.5%) dying. A minority of these cases needed additional specialized care, 5 (4.2%) of cases were referred for surgery, 2 (1.7%) for general consultation, and 2 (1.7%) had a transfer to the PICU. Meanwhile, 1 case (0.8%) was discharged by self-discharge. These results emphasize the importance of developing better neonatal care procedures, early interventions and long term follow ups to increase survival rates and decrease the neonatal morbidity and mortality.

our outcomes are consistent with previous findings of similar studies. For example, in the study of Nguyen et al. (2018) discovered the neonatal discharge rate in 75% of their cases with 18% mortality, close to present study's mortality of 17.5% (28). Likewise, in the context of neonatal care, referrals to specialist care are in line with the trends in neonatal health care where a minority of cases will require surgery or intensive care as demonstrated by Johnson et al., (2019) found that 5% of their children born to neonates needed specialized care following the discharge from hospital(29). The authors add that due to these findings a multidisciplinary post-discharge follow-up and care may greatly optimize long term outcomes for neonates.

In our series the leading cause of readmission was sepsis (39 episodes, 32.5%) and was also frequent in the category of ages at the time of admission >7 days (33 episodes). The second most frequent sign was jaundice, which was observed in 18 out of 28 (64.3%) cases with sign age ≤7 days, suggesting that hyperbilirubinemia affects predominantly neonates at younger ages. The other significant etiologies included congenital anomalies (20 cases, 16.7%) and chronic diseases (16 cases, 13.3%), which suggested a more equitably distributed influence in all age groups. RD was responsible for 15 (12.5%) patients, frequency was significantly higher in those aged above 7 days (14 cases, 93.3%; Table 1). These data also indicate a predominance of younger neonates with certain morbidities such as jaundice and sepsis but variability in other causes such as respiratory distress and

congenital malformations across specific age groups. This underscores the importance of age-targeted neonatal health interventions and follow-up.

our result is in agreeement with some other reports. For instance, Patel et al., (2019) also reported that jaundice and sepsis were more prone in younger age neonates, whereas in older neonates RD was more common(23). The strong relationship between age and reason for readmission emphasizes the need for age-specific risk and disease-oriented care approaches in neonatology.

Most neonates in our study (89 cases, 74.2%) were discharged well, the highest proportion of cases in this group being those admitted after the age of 7 days (54, 60.7%). The incidence of neonatal death was 21 (17.5%), which was most common in those aged >7 days at admission (17, 81.0%).

Specialized referrals were needed in a minority of neonates, of which 5 (4.2%) were for surgery, 2 (1.7%) were for general referral, and 2 (1.7%) were for referral to PICU. One patient (0.8%) had to be discharged at own risk.

The chi square test showed no statistically significant association ($p = 0.21$, Since this value is more than 0.05), it means that there is no statistically significant association with the outcome and the age group (≤7 days vs. >7 days). Which is in line with Patel et al study(23).

Conclusion

- The most prevalent causes of readmission were sepsis (32.5%) and jaundice (23.3%), followed by congenital anomalies (16.7%). These conditions particularly affected younger neonates, with sepsis being the leading cause across all age groups. Neonatal mortality was recorded in 17.5% of cases, with a notable frequency in the ages above 7 days at admission. The majority of neonates (74.2%) were successfully discharged, indicating favorable health recovery, but specialized care referrals were required in a smaller proportion of cases. Furthermore, the chi-square tests demonstrated statistically significant associations between age and causes of readmission, highlighting the need for age-specific interventions.
- l Sepsis and jaundice were the most common reasons for neonatal readmission, and there was a significant impact of sepsis in all age groups, and especially the older neonates. The results emphasize the need for early recognition and management of these high-impact processes, which have a substantial impact on both readmission and mortality.
- l Other maternal factors such as UTI, anemia, and DM were also common suggesting that maternal health status can have effect on the neonate's well-being. The study also noted a high percentage of multipara mothers. This may be because there is a suppression in the education provided about SSC among multiparous mothers compared with primiparous assuming their ability of prior information and experience.

Recommendations

- l Improved postnatal surveillance: Since sepsis and jaundice are the primary drivers of readmissions, the surveillance, and early-detection approaches for these conditions are key.
- l Age-Specific Medical Management: Since neonates in different age groups show different causes of readmission, medical management should be chosen dependent on age. For instance, the younger the neonates being at higher risk to sepsis, and the older, being also at-risk for chronic diseases.
- l Timely Referral System: To handle the problem of severe cases and reduce mortality, a rapid reference system to the specialized units needs to be in place. Neonates discharged from hospital against medical advice should also be closely followed to prevent adverse events.
- l Emphasis on the Congenital Anomalies and Chronic diseases: Early detection and intervention of such problems, which are relatively common even beyond 7 days of age, is essential.
- Discharging criteria: for 1-term includes: Primi • No history of infertility • Age of the mother

>20 years • Vaginal birth • Temperatures below 38.0°C • No postpartum hemorrhage • Blood pressure below 140/90 mmHg • 38–41 weeks gestation • 2500–4500 g weight at birth

- The newborn has a stable temperature and can feed, i.e. suck and swallow.

2- for preterm includes:

- Medically stable with no apnoeic or cyanotic episodes for one week: feeding well on "fullfeeds" with no feeding-related problems like apnoea, cyanosis, or vomiting. -Able to maintain body temperature independently. -Satisfactory weight gain during the five to seven days period preceding discharge and weight ≥1800 g at discharge. -No outstanding medical or social issues. -Parents had completed parent education and were capable and confident to care for their infants.

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