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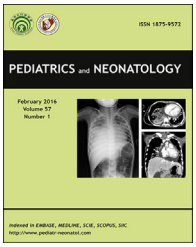

ORIGINAL ARTICLE

Newborn Readmissions to Slovenian Children's Hospitals in One Summer Month and One Autumn Month: A Retrospective Study

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Background: With the shortening length of stay of newborns in hospitals after birth, concerns have been raised about the possible rise in readmission rates. In Slovenia, where the normal length of stay is 3 days, no data on readmissions were available. We sought to determine the frequency and causes for readmissions.
Methods: We conducted a retrospective study on all newborns readmitted to Slovenian children's hospitals and wards in June 2012 and November 2012. We obtained basic demographic data for newborns and mothers, analyzed the frequency of diagnoses, and compared the duration of treatment between summer months and autumn months.
Results: The proportion of readmissions in June 2012 and November 2012 was 6% and 5.9%, respectively. Around 10% more boys were readmitted in June 2012 and November 2012. In June 2012, the mean age was 12.2 days, and the mean birth weight was 3444 g. In November, the mean age was 10.5 days, and the mean birth weight was 3271 g. Around 50% of mothers were primiparous, and their mean age was around 31 years. Most received $>$ 10 prenatal check-ups and participated in a prenatal class. The most common diagnosis in June 2012 and November 2012 was jaundice. The duration of treatment did not statistically significantly differ between summer months and autumn months, but it was associated with the admission diagnosis and infants' characteristics.

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Conclusion: Our study showed that the readmission rate in Slovenia was much higher than in some other developed countries. Prospective studies are needed to further confirm the findings and highlight the possible causes for this observation.

1. Introduction

Throughout the developed world, attempts have been made to reduce the length of stay of newborns and their mothers in hospitals after birth. Trends to decrease the length of stay were mainly attributed to lowering health care costs, when financial pressures on hospitals and insurance companies were rising.[1] Due to various reasons, one being medical risks, the trends later reversed and early discharge is currently defined as a stay of $<$ 48 hours for women who had vaginal delivery and $<$ 96 hours for women who delivered via cesarean section.[2,3]

With this trend of reducing postnatal hospital stay, concerns have been raised regarding the impact on the health of women and newborns. While some studies have shown an increase in hospital readmissions,[4–6] others have found no correlation between the length of postnatal stay and rehospitalizations.[7,8] In most cases, newborns were readmitted because of hyperbilirubinemia or dehydration, associated with weight loss and/or failure to thrive.[8–12] In addition, a recent study showed that factors other than the severity of newborns' illness contributed to readmissions; namely, familial factors as well as sociological factors, such as age of the mother, her marital and employment status, and the number of previous deliveries.[5]

In Slovenia, newborns are discharged from the hospital on the 3rd day after a vaginal delivery, provided that no complications arise in that period. In the first 24 hours after discharge, a community nurse visits the family, providing them with basic advice on the care and well-being of their baby. In addition, primary as well as secondary pediatric care is well established and easily accessible, should the need arise. No data exist, however, regarding the percentage of hospital readmissions or the most common reasons for them in Slovenian hospitals.

To shed more light on the problem, a retrospective study was performed, in which the number and reasons for readmissions in Slovenian children's hospitals and wards were analyzed. Two months, namely June 2012 and November 2012, were chosen to elucidate any possible differences between summer months and autumn months. These two months were chosen based on epidemiological data for the years 2006–2011, which showed that respiratory viruses such as respiratory syncytial virus and influenza viruses began circulating in the population around the start of November but were not present during the summer.[13]

2. Methods

2.1. Data source

Patient data were gathered from Slovenian hospitals with pediatric wards, specialized children's hospitals, and maternity hospitals. Data were obtained from hospital records. Approval for the study was obtained from The National Medical Ethics Committee of Slovenia.

2.2. Patient cohort

Data were obtained for all infants between the ages of 0 days and 28 days who were readmitted to Slovenian hospitals after having been discharged from the maternity hospital where they were born. Data were gathered for all readmissions that occurred in June 2012 and November 2012. Among the data gathered for the newborns were age, sex, birth weight, diagnosis on admission, and duration of treatment. In addition to infants' data, data for their mothers were also obtained. Among these were age of the mother, type of delivery, number of previous deliveries, number of prenatal check-ups, education level, employment status, marital status, and place of residence. Total number of births in Slovenia in June 2012 and November 2012, as well as perinatal mortality rates for 2011, were obtained from The National Institute of Public Health of the Republic of Slovenia.

2.3. Statistical analysis

The percent of readmissions for June 2012 and November 2012 was calculated based on data for the total number of births in these months. Descriptive statistics was used to present basic demographic data about readmitted infants and mothers. Chi-square test was used to test the association between two categorical variables when no expected frequency in the contingency table was lower than five. If the frequency was lower, likelihood ratio test was used. Comparison between observational months in numerical variables was done using Mann–Whitney *U* test for non-normal data and with Student *t* test for normal data. Multiple linear regression was used to test the association between observational month, infants' gender, age, weight, and readmission diagnosis as independent and treatment duration as the dependent variable. Due to the smaller sample of mothers, a separate multiple linear regression