CONSEQUENCES OF IMPLEMENTATIONS OF NUTRITIONAL CARE BUNDLE IN INFANTS BORN BEFORE 32 GESTATIONAL WEEKS

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INTRODUCTION

Preterm infants born before 32 completed gestational weeks (GW) are at risk of malnutrition, growth failure, and neonatal morbidity especially those infants born extremely preterm (1,2). Nutritional optimalization may play a significant role in influencing morbidity and growth outcomes in infants born preterm (3,4).

OBJECTIVES

To evaluate how a nutritional care bundle affect growth, morbidity, and the occurrence of associated complications in preterm infants born before 32 completed GW.

METHODS

This before-and-after study compared 87 very preterm infants (<32 GW) born 2018 (*Before group*) with 75 infants born 2020 (*After group*), all treated at the same neonatal intensive care unit in the Czech Republic, Fig 1.

A nutritional care bundle was implemented during 2019, comprising daily calculation of fluids using an online software, targeted fortification of breastmilk, and use of a standard concentrated parenteral solution. Anthropometric data was registered once weekly using the Fenton growth curve (5) and perinatal data was prospectively registered for both groups.

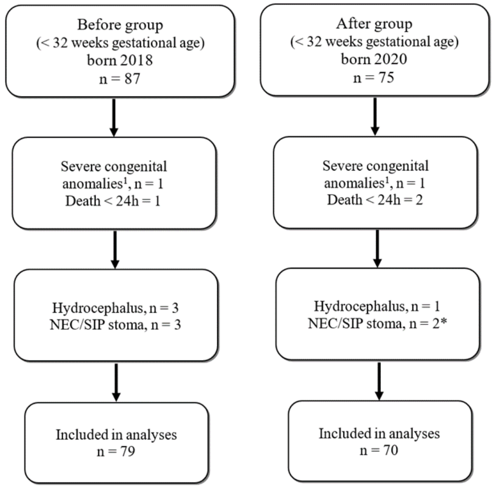

Fig 1. Included and excluded infants.

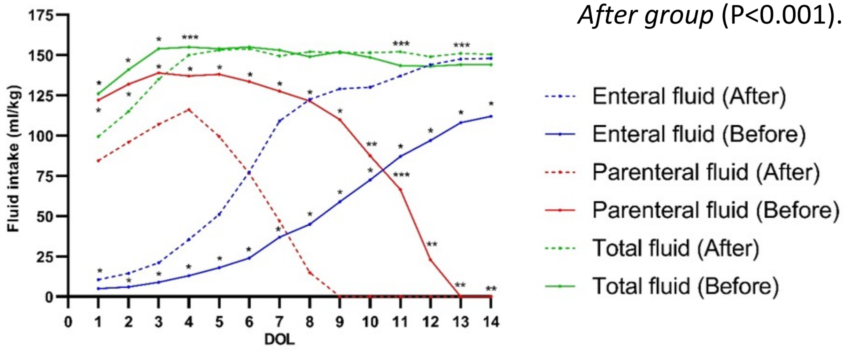

Fig 2. Total fluid intakes, day of life (DOL) 1-14.
* P < 0.05. ** P < 0.01. *** P < 0.001

RESULTS

There were no differences in baseline characteristics between the groups. During postnatal days 1-14, parenteral fluid intake was significantly lower in the *After group* compared to the *Before group* and conversely, enteral fluid intake was significantly higher in the *After group,* Fig 2. Weight z-scores decreased significantly less from birth to 36 weeks in the *After group* (–0.8 [IQR –1.3 to –0.5]) compared to the Before group (–1.5 [IQR –2.0 to –1.2]) and head circumference z-scores decreased significantly less in the *After group* (–0.8±0.9) compared to the *Before group* (–1.6±1.1), Fig 3A-B. A decrease in the rate of treated patent ductus arteriosus was noted in the *After group* (P<0.001).

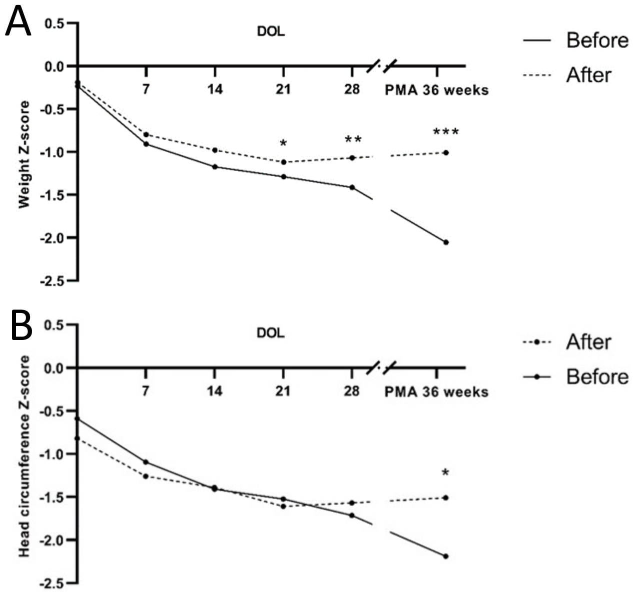

Fig 3. Weight (A) and head circumference (B) Z-scores during admission period before and after implementation of bundle of care. *P <0.05 **P <0.01 ***P < 0.001.

CONCLUSIONS

This observational study showed significant differences in postnatal growth and incidence of patent ductus arteriosus between the groups of very preterm infants. The main cause of these differences was the implemented nutritional care bundle including individual daily calculation of fluids, use of concentrated parenteral solution and targeted fortification of enteral nutrition.

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