

# A comparative retrospective study: Does skin to skin influence blood glucose levels in newborns born to gestational diabetic mothers?



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## Abstract

Skin-to-skin (STS) has become a standard practice change for hospitals, as national organizations have recognized the substantial benefits for mothers and newborns. However, further research was needed regarding the impact STS has on newborns of gestational diabetic mothers (GDM), as neonatal hypoglycemia occurs most commonly in the first hour postpartum. The problem was identified after reviewing limited data from a pilot study regarding newborns' blood glucose levels, without regard to GDM. Research has supported that implementation of a STS protocol is associated with improved adaptation and stabilization of newborns thus, this research study identified the effects of STS on Full Term Newborns (FTN), born to GDM mothers in the immediate postpartum period.

## Introduction

A vulnerable period exists after the birth of newborns, transitioning from sole reliance on the mother's blood flow and placenta to independent body functions. Newborns born to GDM can face a challenge during this time with regulation and establishment of stabilized blood glucose levels and physiological adaptation.

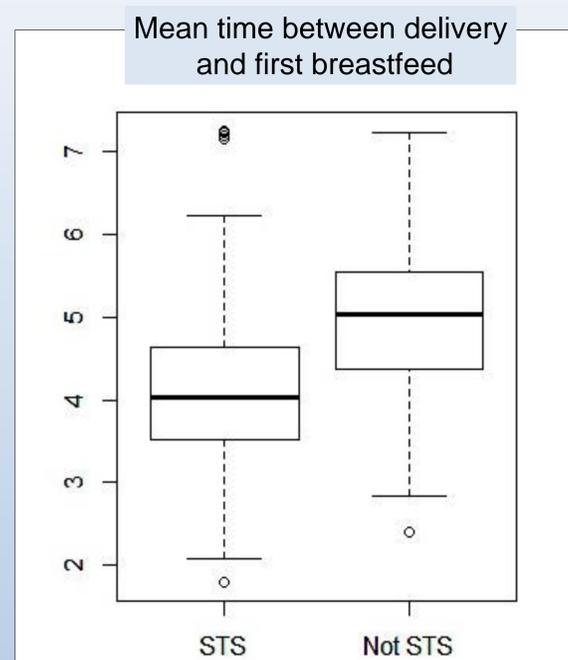
Gestational diabetes affects up to 14% of pregnancies and is increasing throughout the world with an average of 20,000 cases each year, ultimately affecting the fetus and newborn morbidity and mortality rates (Poomalar, 2015). Understanding the benefits of skin-to-skin (STS), defined as placing the naked newborn prone on the mothers' bare chest within the first five minutes after birth, (Haxton, Doering, Gingras & Kelly, 2012), and the influence it has on adaptation and transition, can impact how nursing practice is performed at the bedside. Therefore, the research goal was to assist FTN transition, allowing innate processes and behaviors after birth to facilitate integrated physiologic adaptation by being placed STS. The evidence reveals the development and improvement of STS protocols can transform standards of care in the immediate postpartum period to support best practices for FTN born to GDM.

## Methods

Data was gathered through retrospective chart reviews to compare subjects before and after a STS practice change. The study sample consisted of 308 subjects with inclusion criteria of FTN; born to GDM; blood glucose levels taken at one, two, and four hours of age; documentation of STS initiated immediately after birth or not.

## Results

The data analysis revealed three statistical findings. Comparing blood glucose levels of the STS group to the non-STS group, newborns placed STS had lower blood glucose levels compared to those who were not however, based on the mean results for each group and time interval, blood glucose levels remained greater than 45 mg/dL. Furthermore, newborns who breast-fed had initially higher and increased stabilization of blood glucose levels compared to those bottle-fed. Secondly, a statistical significant relationship was identified that newborns placed STS began breastfeeding earlier than those who were not. Thirdly, a moderate relationship was found that infants placed STS had decreased NICU admissions.



## Discussion

Newborns born to GDM face a challenge of effectively managing the physiological changes, specifically blood glucose levels within the first hours after birth. However, based on the study results, newborns placed in an advantageous STS environment supports stabilization, establishment of breastfeeding, and have a decreased chance of being admitted to the NICU, thus providing further provision of decreasing future health complications.



Glucose Timing	Blood Glucose Level (mg/dL)	Sample
1 hour	49.08	STS
1 hour	63.50	Non STS
2 hour	54.41	STS
2 hour	63.50	Non STS
4 hour	53.72	STS
4 hour	60.34	Non STS

	Not NICU	NICU	Proportions
Not STS	131	15	10.3%
STS	150	8	5.1%

## Conclusion

Hospitals and nurses who support placing infants STS can improve outcomes and provide an adaptive environment after birth. Implementing STS for infants born to GDM can provide short and long term benefits of reducing morbidity and mortality for this specific patient population.

## Future Research

Based on the results, further research should be conducted related to how STS influences newborn's blood glucose levels. While this study focused on newborns born to GDM, to gain information pertaining to the majority of deliveries in the U.S. without complications, other studies could provide further support for the impact STS has on infant outcomes. Additionally, continued growth within nursing research could build evidence based practice of prior studies and improve the recommended standard of care of placing newborns STS.

## References

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- Poomalar, G. K. (2015). Changing trends in management of gestational diabetes mellitus. *World Journal of Diabetes, 6*(2), 284-295. doi: 10.4239/wjd.v6.i2.284