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**Associations between the duration and quality of sleep of pregnant women in the  
third trimester with the duration of labor**

São Paulo

2025

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**Associations between the duration and quality of sleep of pregnant women in  
the third trimester with the duration of labor**

**Preliminary version**

Thesis presented to the School of Nursing at the University of São Paulo, as a requirement for the degree of Master of Science by the Graduate Program in Nursing.

Area of concentration: Healthcare

Supervisor: Prof. Dr. Christiane Borges do Nascimento Chofakian

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*Nullius in verba*<sup>1</sup>

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<sup>1</sup> The Royal Society. (n.d.). *History of the Royal Society*. <https://royalsociety.org/about-us/history/>

## ABSTRACT

Sales, A. R. V. (2025). *Associations between the duration and quality of sleep of pregnant women in the third trimester with the duration of labor* [Master's Thesis, University of São Paulo].

The text below is related to the **project** of this thesis. The final abstract can only be produced when the research is completed.

Among the biopsychosocial changes that occur during pregnancy are alterations in the sleep-wake cycle pattern. Research suggests that there are associations between the duration and quality of sleep in pregnant women during the prenatal period and adverse maternal-infant health outcomes. The primary aim of this project is to investigate the presence/absence of significant associations between the duration and quality of sleep in pregnant women in the third trimester and the duration of labor. For this purpose, a study will be conducted with 133 pregnant women in the third trimester, followed up at SUS birthing centers located in the city of São Paulo. Demographic, anthropometric, obstetric, actigraphic, sleep-related, and psychological state data will be collected from the participants, in addition to secondary data from the women's medical records and prenatal books. The study has already obtained all necessary ethical approvals from the competent authorities. The results will be analyzed by comparing group means through an analysis of covariance (ANCOVA). The hypothesis is that poorer sleep quality and duration throughout pregnancy are associated with a longer duration of labor. In addition to training and capacitating professionals and generating knowledge on a public health issue, it is expected that this study will promote and contribute to the development of new services and technologies for monitoring pregnant women, highlighting the relevance of the sleep-wake cycle for maternal-infant health.

**Keywords:** Pregnancy. Childbirth. Humanizing Delivery. Natural Childbirth. Duration of childbirth. Obstetrics. Sleep. Sleep quality. Sleep Duration. Actigraphy. Chronobiology.

## RESUMO

Sales, A. R. V. (2025). *Associações entre a duração e a qualidade do sono de gestantes no terceiro trimestre com a duração do trabalho de parto* [Dissertação de Mestrado, Universidade de São Paulo].

O texto abaixo está relacionado ao **projeto** desta dissertação. O resumo final só poderá ser produzido quando a pesquisa for finalizada.

Dentre as alterações biopsicossociais que ocorrem durante a gravidez estão as mudanças no padrão do ciclo sono-vigília. Pesquisas sugerem que há associações entre a duração e a qualidade do sono de gestantes no período pré-natal com desfechos adversos na saúde materno-infantil. O objetivo deste projeto é investigar a presença/ausência de associações significativas entre a duração e a qualidade do sono de gestantes no terceiro trimestre com a duração do trabalho de parto. Para isso, será realizado um estudo com 133 gestantes no terceiro trimestre gestacional acompanhadas em casas de parto do SUS, localizadas no município de São Paulo. Serão coletados dados sociodemográficos, antropométricos, obstétricos, actigráficos, dados relacionados ao sono e ao estado psicológico das participantes, além de dados secundários dos prontuários e cadernetas das gestantes. O estudo já obteve todas as aprovações éticas para sua operação por parte das autoridades competentes. Os resultados serão analisados pela comparação das médias entre grupos por meio de uma análise de covariância (ANCOVA). A hipótese é que uma menor qualidade e duração de sono no final do terceiro trimestre gestacional estão associadas a uma maior duração do trabalho de parto. Além de formar e capacitar profissionais e gerar conhecimento em um assunto de interesse público, espera-se que este estudo promova e contribua para o desenvolvimento de novos serviços e tecnologias de acompanhamento de gestantes, destacando a relevância do ciclo sono-vigília para a saúde materno-infantil.

**Palavras-chaves:** Gravidez. Parto. Parto Humanizado. Parto Natural. Duração do parto. Obstetrícia. Sono. Qualidade do sono. Duração do sono. Actigrafia. Cronobiologia.



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## 1 INTRODUCTION

### ! Important

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This chapter is currently a dumping ground for ideas, and I don't recommend reading it.

You are currently viewing the preliminary print version of this master's thesis.

This document follows the collection of articles thesis format. This first chapter serves as an introduction to the thesis subject, providing its justification, aims, and a list of all projects and related activities produced during its development. The subsequent chapters consist of a series of articles connected to the thesis, with the exception of the last one, which encompasses a discussion and final remarks.

All analyses in this document are reproducible and were conducted using the R programming language along with the Quarto publishing system. It's worth noting that this type of thesis is best suited for online viewing. To access the digital version and see the latest research updates, please visit <https://aliciarvilefortsales.github.io/mastersthesis/>.

Given its preliminary nature, not all chapters are ready for reading. However, the author has chosen to display the entire state of the thesis rather than presenting only polished sections. This approach provides readers with a more comprehensive understanding of the work in progress. Chapters not suitable for reading will include a call block indicating their status.

## 2 THE EXPRESSION OF THE SLEEP-WAKE CYCLE THROUGHOUT PREGNANCY

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### i Target journal

1. Chronobiology International (IF 2022: 2.8/JCR | A1/2017-2020).
2. Journal of Biological Rhythms (IF 2022: 3.5/JCR | A2/2017-2020).

### i Note

The following study was performed by Alícia Rafaelly Vilefort Sales (**ARVS**), Daniel Vartanian (**DV**), Maria Augusta Medeiros de Andrade (**MAMA**), Mario Pedrazzoli (**MP**) and Christiane Borges do Nascimento Chofakian (**CBNC**).

**ARVS**, **DV** and **MAMA** contributed to the study's design. **ARVS** implemented the study, performed the statistical analysis, and authored the manuscript. **CBNC** and **MP** served as scientific advisors. All authors participated in discussions about the results and contributed to the final manuscript revision.

*Future reference:* Sales, A. R. V., Vartanian, D., Andrade, M. A. M., Pedrazzoli, M., & Chofakian, C. B. N. (2024). The expression of the sleep-wake cycle throughout pregnancy: a systematic and quantitative literature review. *Chronobiology International*.

### 3 ASSOCIATIONS BETWEEN THE DURATION AND QUALITY OF SLEEP OF PREGNANT WOMEN IN THE THIRD TRIMESTER WITH THE DURATION OF LABOR

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## 4 CONCLUSION

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\*In accordance with the American Psychological Association (APA) Style, 7th edition.

## GLOSSARY

For an extensive list of chronobiology related terms and definitions, please refer to Aschoff (1965) and Marques and Oda (2012).

### **Circadian rhythm**

A rhythm with a period close to a day/24h, an approximation to the period of the earth's rotation (Pittendrigh, 1960). From the Latin *circā*, around, and *dies*, day (Latinitium, n.d.). Example: the sleep-wake cycle.

## APPENDICES

### APPENDIX A – APPENDIX A

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