

Tal De- Haan<sup>1</sup>, Ariela Hazan<sup>1</sup>, Nofar Benassayag Kaduri<sup>1</sup>, Elkana Kohn<sup>1</sup>, Maya Berlin<sup>1</sup>, and Matitiahu Berkovitch<sup>1,2</sup>

<sup>1</sup>Clinical Pharmacology and Toxicology Unit; Drug Consultation Center, Shamir Medical Center (Assaf Harofeh), Zerifin;

<sup>2</sup>The Andy Lebach Chair of Clinical Pharmacology and Toxicology, Tel Aviv University

## Introduction

Lately, the prevalence of cardiovascular diseases in women of child-bearing age has increased. Beta-blockers are one of the most common pharmacological groups for treating cardiac morbidities. While the information regarding the safety during pregnancy and breastfeeding of "old" non-selective beta-blockers is available (labetalol, propranolol, etc.), the data for bisoprolol, a beta-1 adrenoreceptor selective antagonist, is lacking. We aimed to evaluate the physical and psychomotor development of children exposed to bisoprolol during breastfeeding.

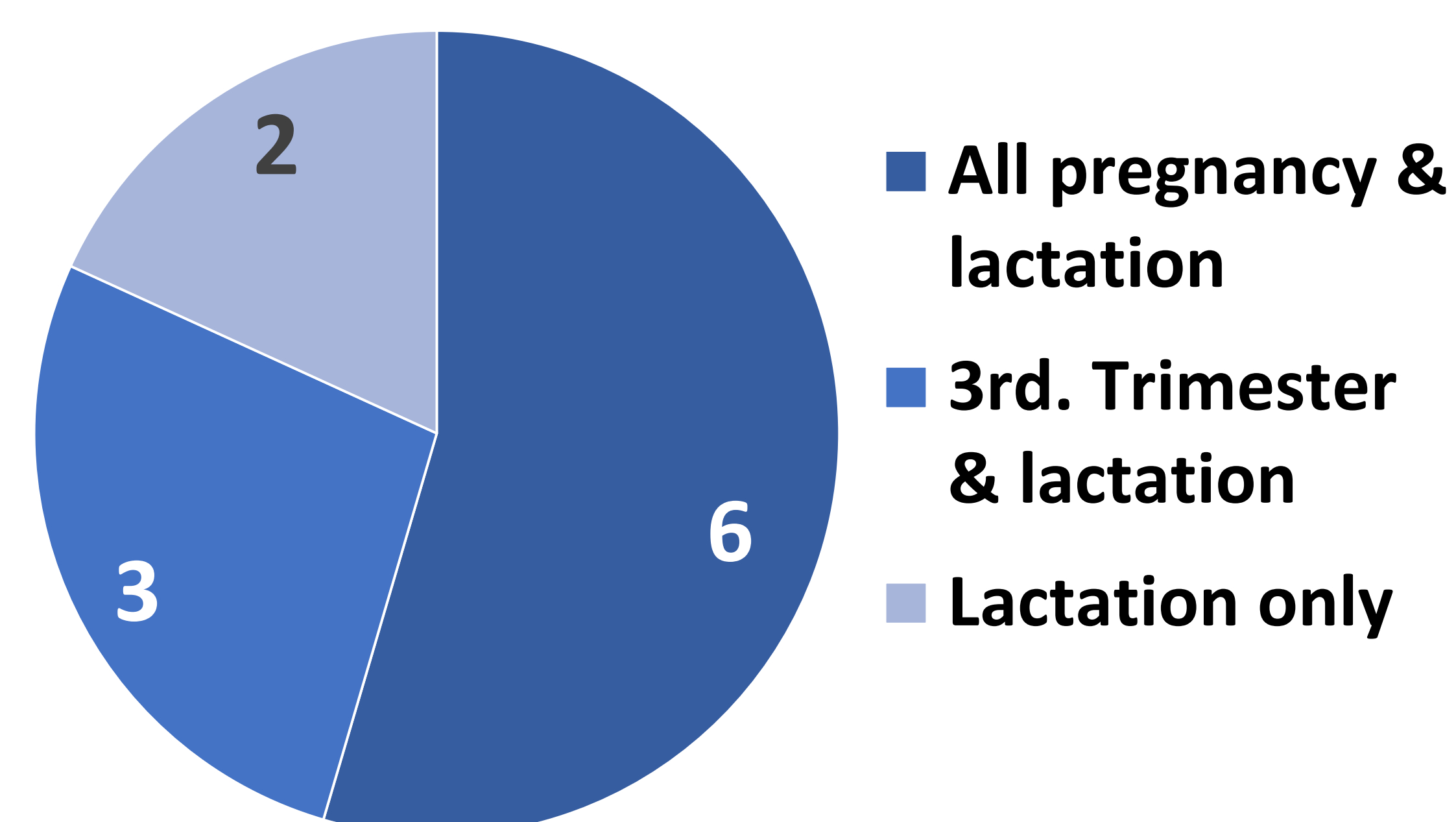
## Methods

A prospective pilot study. Women who contacted TIS Zerifin between the years 2016-2022 seeking for information on the safety of bisoprolol during breastfeeding were followed-up. A telephone interview was conducted to assess children's outcome and neurodevelopment by using age-adjusted Pediatric Quality of Life (PedsQL\*) questionnaires, and Denver Developmental Scale.

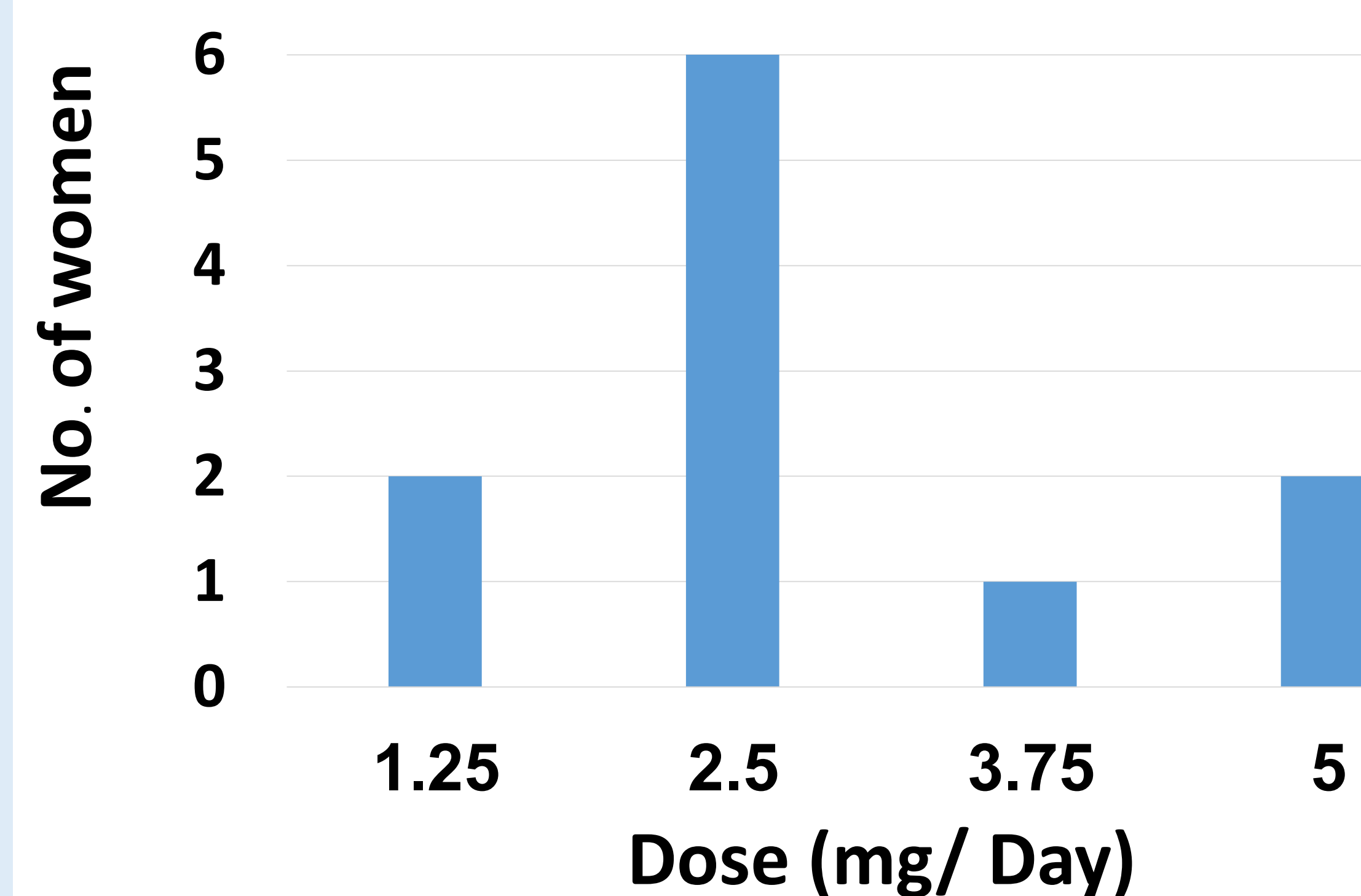
**Table 1**  
Maternal and child's characteristics

	Bisoprolol during breastfeeding N=11
Maternal age, years (median, IQR)	35 (32.5-37)
Infants' age at follow-up, months (median, IQR)	49 (25.5-58.5)
Lactation full (yes), N(%)	8 (73%)
Adverse effect in breastfed infant, N(%)	2 (18%)
Somnolence, N (%)	1 (9%)
Poor weight gain, N (%)	1 (9%)
Concomitant medications, N (%)	(27%)3
PEDsQL Total (median, IQR)	97.5 (95.9625-100)
PEDsQL Psychosocial Health (median, IQR)	97.9 (95.55- 100)
PEDsQL Physical Health (median, IQR)	100 (100-100)

**Figure 1**  
Exposure's period



**Figure 2**  
Bisoprolol dosage



## \* PedsQL

The PedsQL measures four to five aspects of functioning depending on age: physical, emotional, social, cognitive, and school-related. A delay in psychomotor development was considered when the infant failed to reach a grade of 90 in the total score.

## Conclusions

Exposure to bisoprolol during breastfeeding was not associated with negative physical and psychomotor offspring development. Further studies are needed in order to strengthen the conclusion of our case series.