



Introduction

Continuous glucose monitoring (CGM) has emerged as a promising tool that offers valuable insights into glycaemic variability. While CGM has been routinely utilised in pregnant women with type 1 and 2 diabetes mellitus, its application in non-diabetic pregnancies is a relatively novel area of research which has not yet been established. Studies have shown that glycaemic levels at thresholds less than the diagnostic criteria for gestational diabetes mellitus (GDM) have an increasing risk of adverse outcomes with increasing hyperglycaemia. Therefore, it seems logical to hypothesise whether CGM could be used to establish a relationship between antenatal glycaemic variance and adverse outcomes of GDM. This scoping review seeks to explore the existing literature to determine the extent of research conducted into the use of CGM in non-diabetic pregnant women and to summarise the studies according to the glucose parameters used, the cohort involved, the clinical outcomes reported, and the study design used.

Method

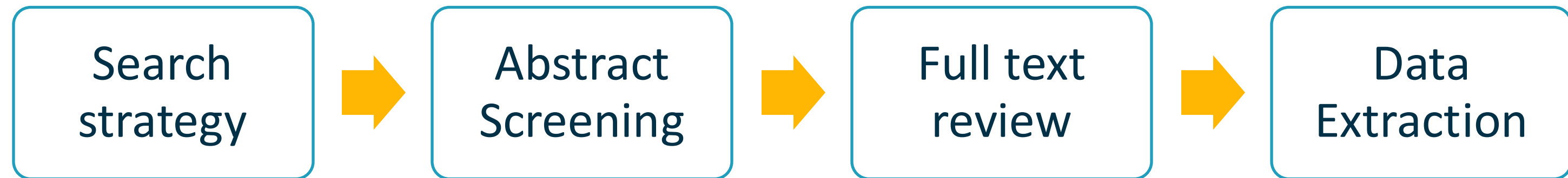
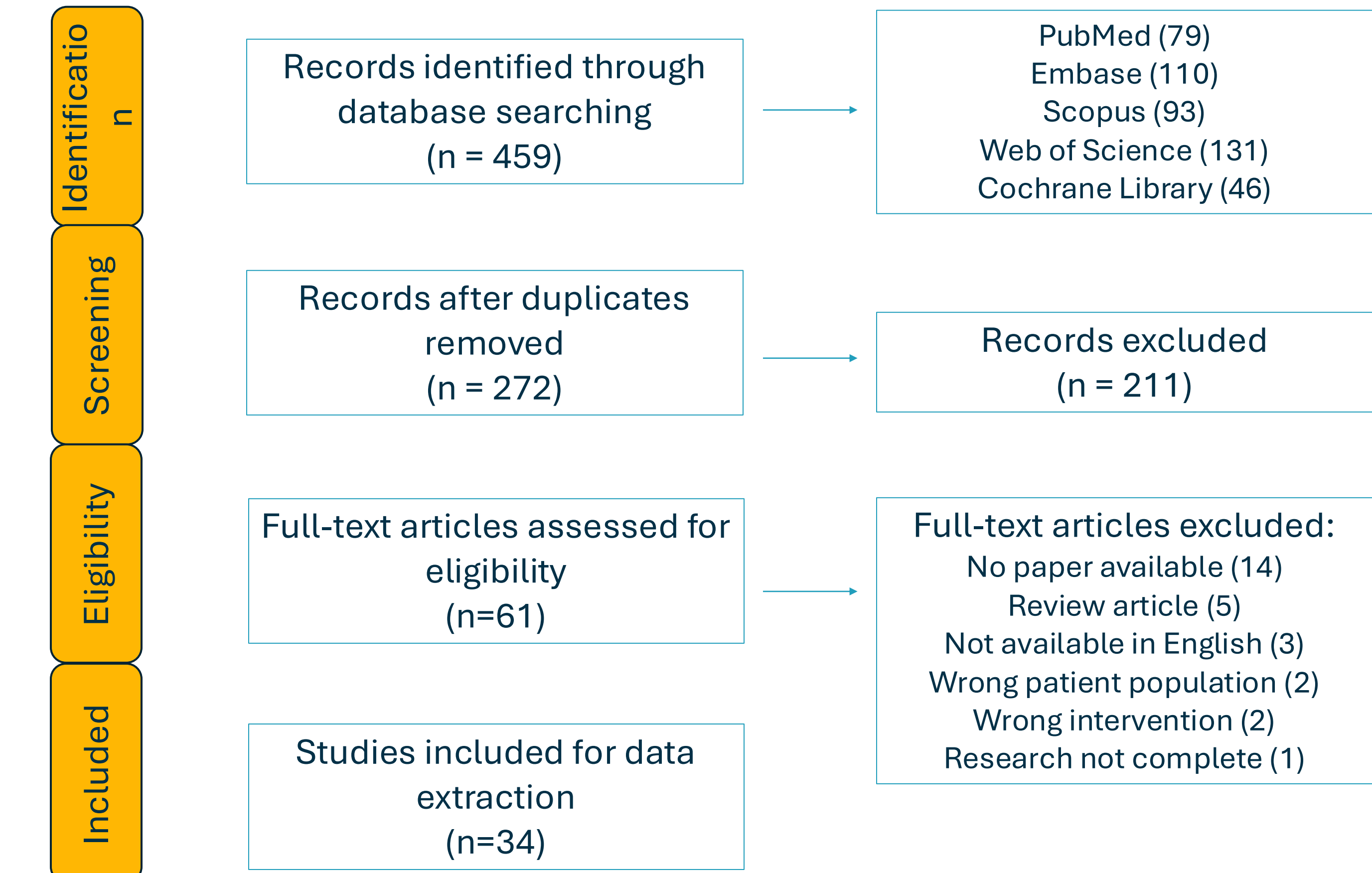


Figure 1. Schematic representing the scoping review process in accordance with JBI methodology for scoping reviews.¹



Results

1. Glucose Parameters

Total parameters used	52
Descriptions of mean glucose level	7
Descriptions of prandial glucose	15
Descriptions of time in/out of range	7
Descriptions using area under the curve	13
Other statistical descriptions	8

Figure 3. Table displaying the number of ways CGM data was described in five different groupings across the thirty-four studies.

Mean Glucose Value

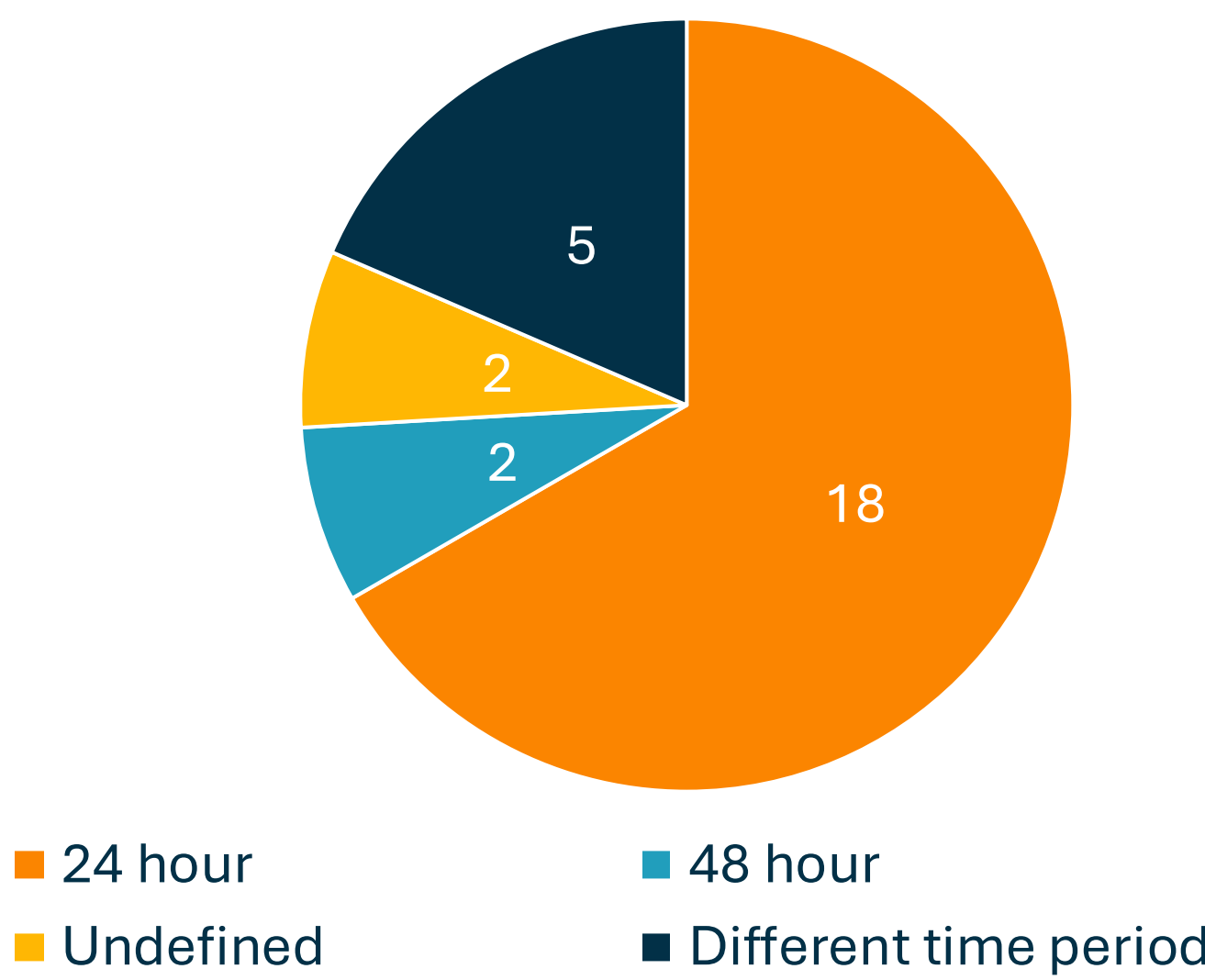


Figure 4. Incidence of timeframes used to define the mean glucose value across the twenty-seven studies that reported it.

2. Cohort Characteristics



Figure 5. Graphic representation of the number of studies which analysed each population.

Exclusively NDP studies: BMI as a factor

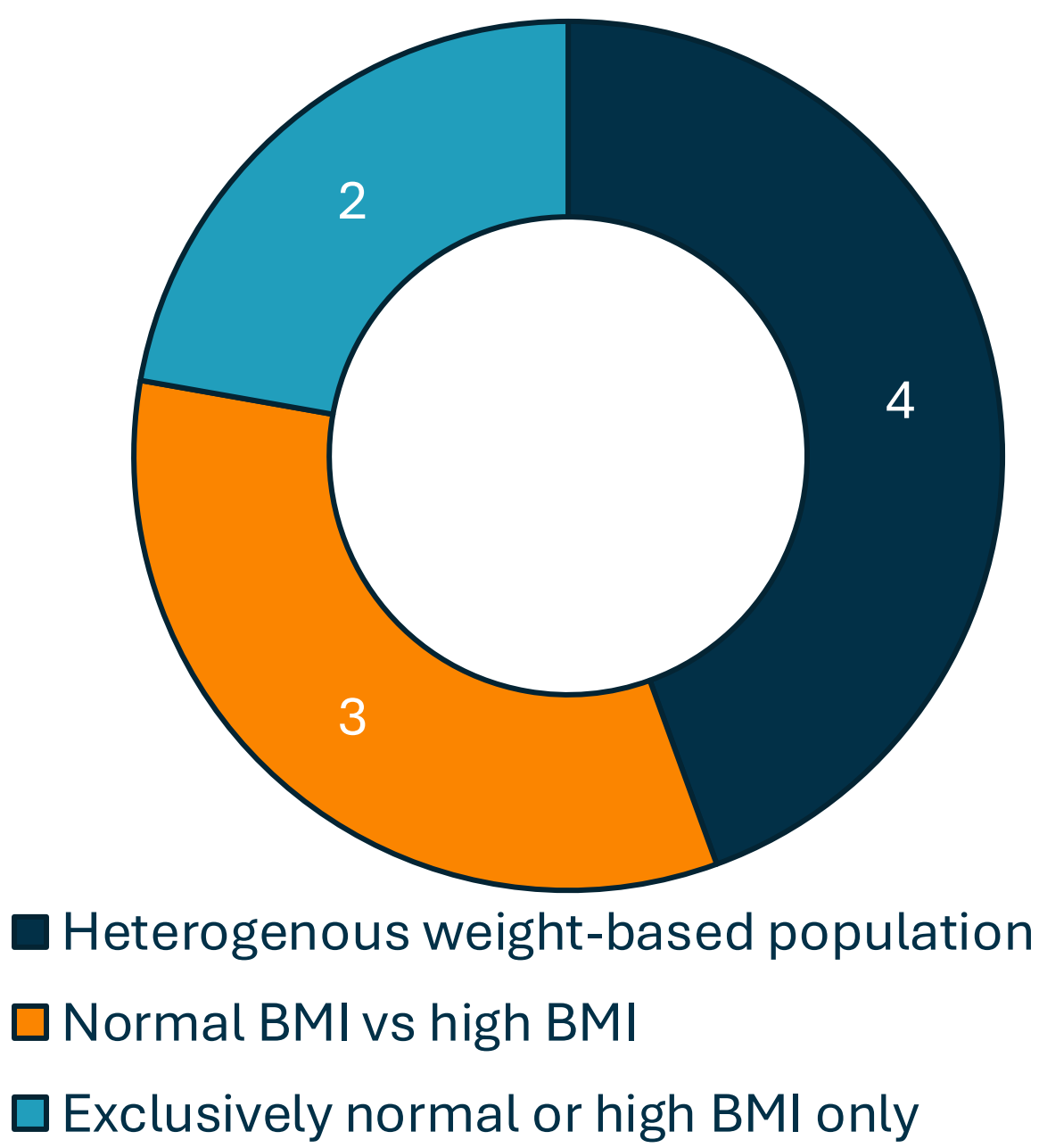


Figure 6. Breakdown of exclusively non-diabetic studies that used BMI as a factor in cohort selection.

Stage of Pregnancy Studied

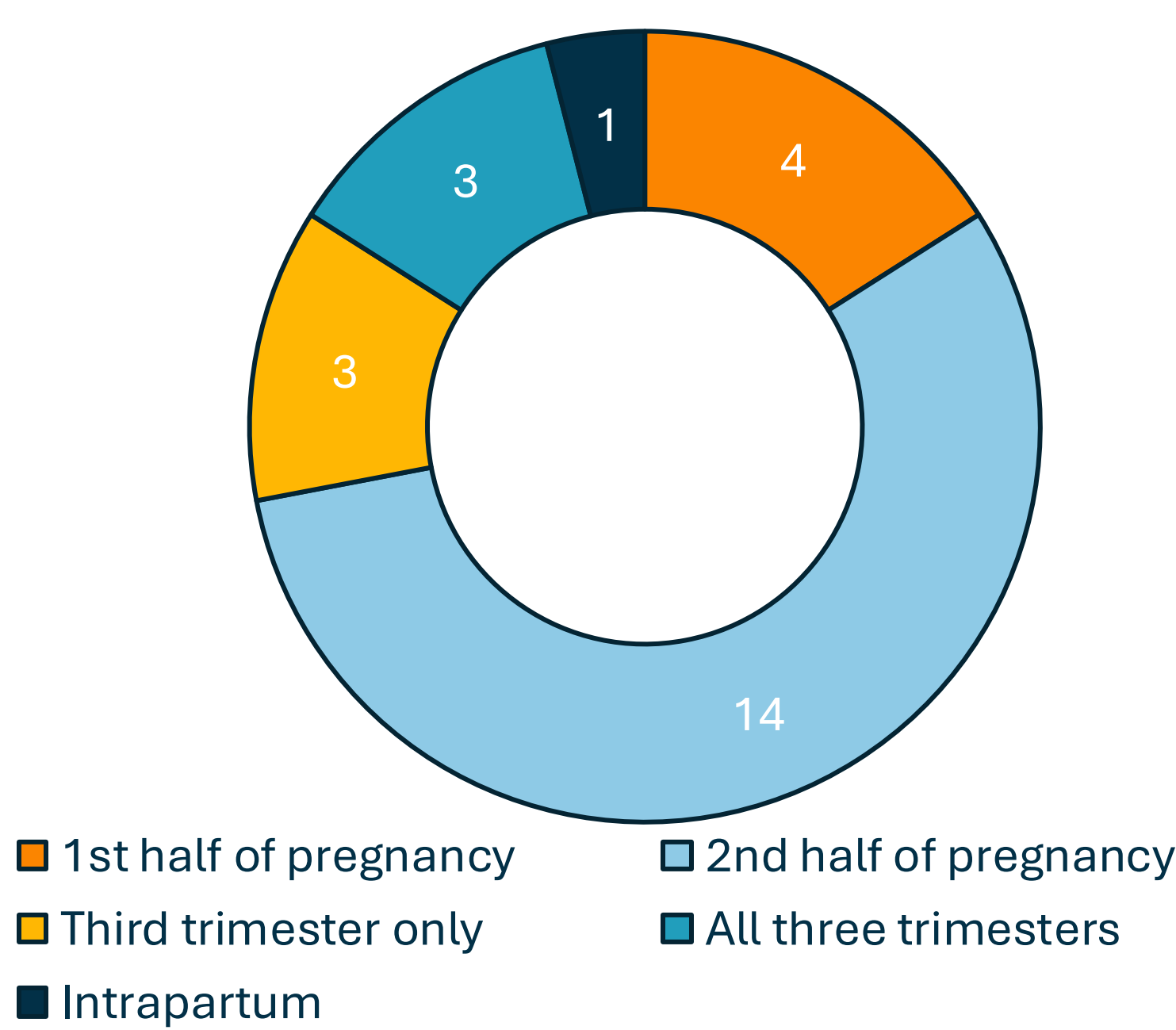


Figure 7. The number of studies that used CGM during various stages of pregnancy.

3. Maternal/Neonatal Outcomes Reported

Clinical Outcomes Reported

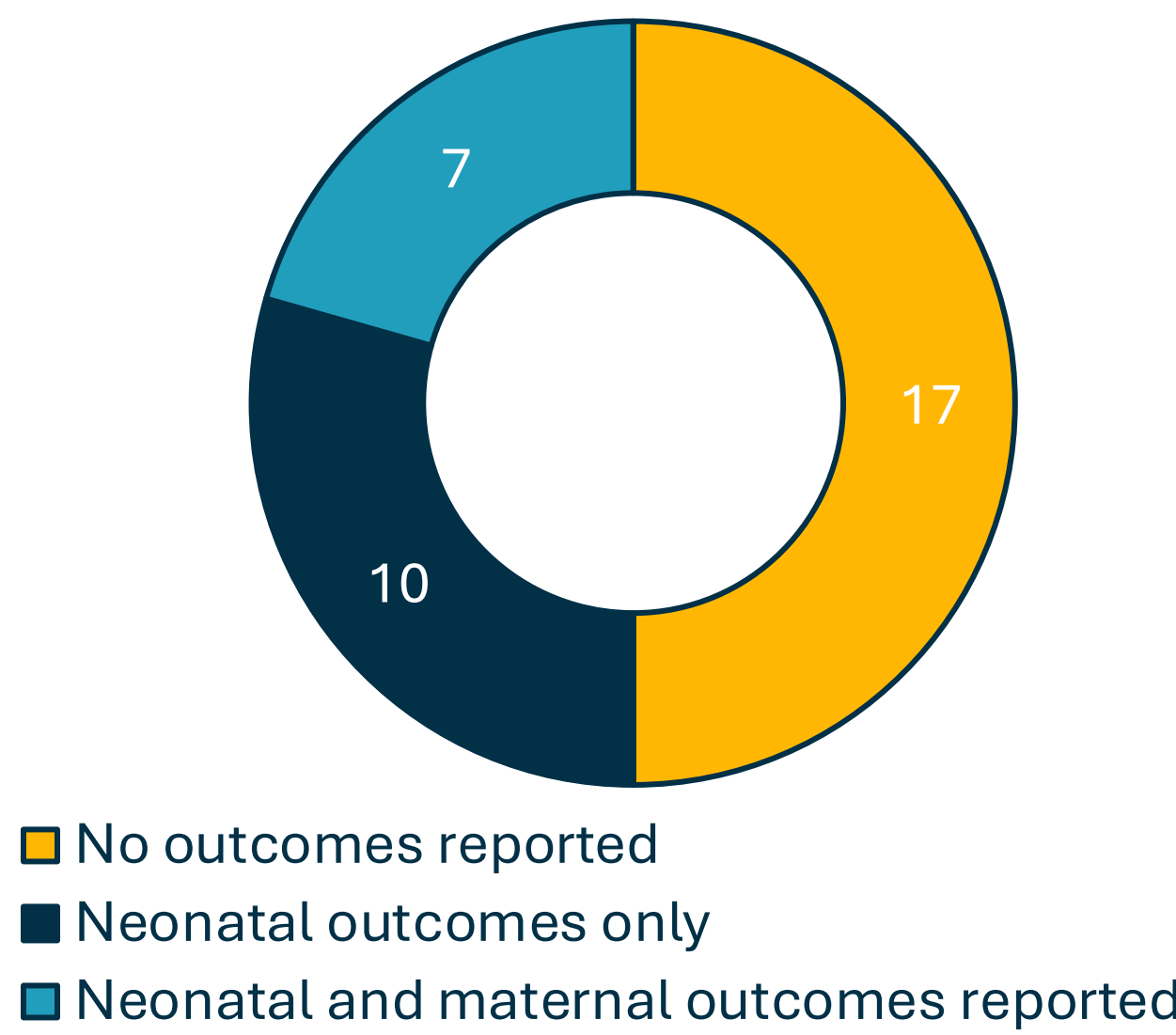


Figure 8. Number of studies that reported maternal and neonatal outcomes.

Neonatal Outcomes Reported

Birth weight	15
Macrosomia	6
Birth weight centile	5
NICU admission	5
Postnatal hypoglycaemia	5
Large for gestational age	4
Hyper bilirubinaemia	4
Respiratory distress syndrome	4
APGAR score	3

Figure 9. Table documenting the number of studies that each neonatal outcome was reported in.

4. Study Design

Prospective observational studies	30	Food diaries	11
Pilot studies	5	Standardised food	7
Randomised cross-over studies	2	CGM used for 72 hours	21
Retrospective studies	2	CGM used < 72 hours	5
		CGM used > 72 hours	8

Figure 10. Split table displaying the number of studies that related to the corresponding study characteristic.

Conclusion

Our scoping review highlights the lack of consensus among studies in the reporting of data from continuous glucose monitoring. The absence of defined descriptors for CGM data and the diversity in study designs interfere with the comparability of the studies. The variability and scarcity in clinical outcomes reported hinder the ability to identify a relationship between CGM and outcomes in non-diabetic pregnant women. Our study demonstrates a real need for standardisation in reporting of CGM data and its associated clinical outcomes in a pregnant population.

References

1. Peters, Micah & Godfrey, Christina & Mcinerney, Patricia & Soares, Cassia & Khalil, Hanan & Parker, Deborah. (2015). Methodology for JBI Scoping Reviews.