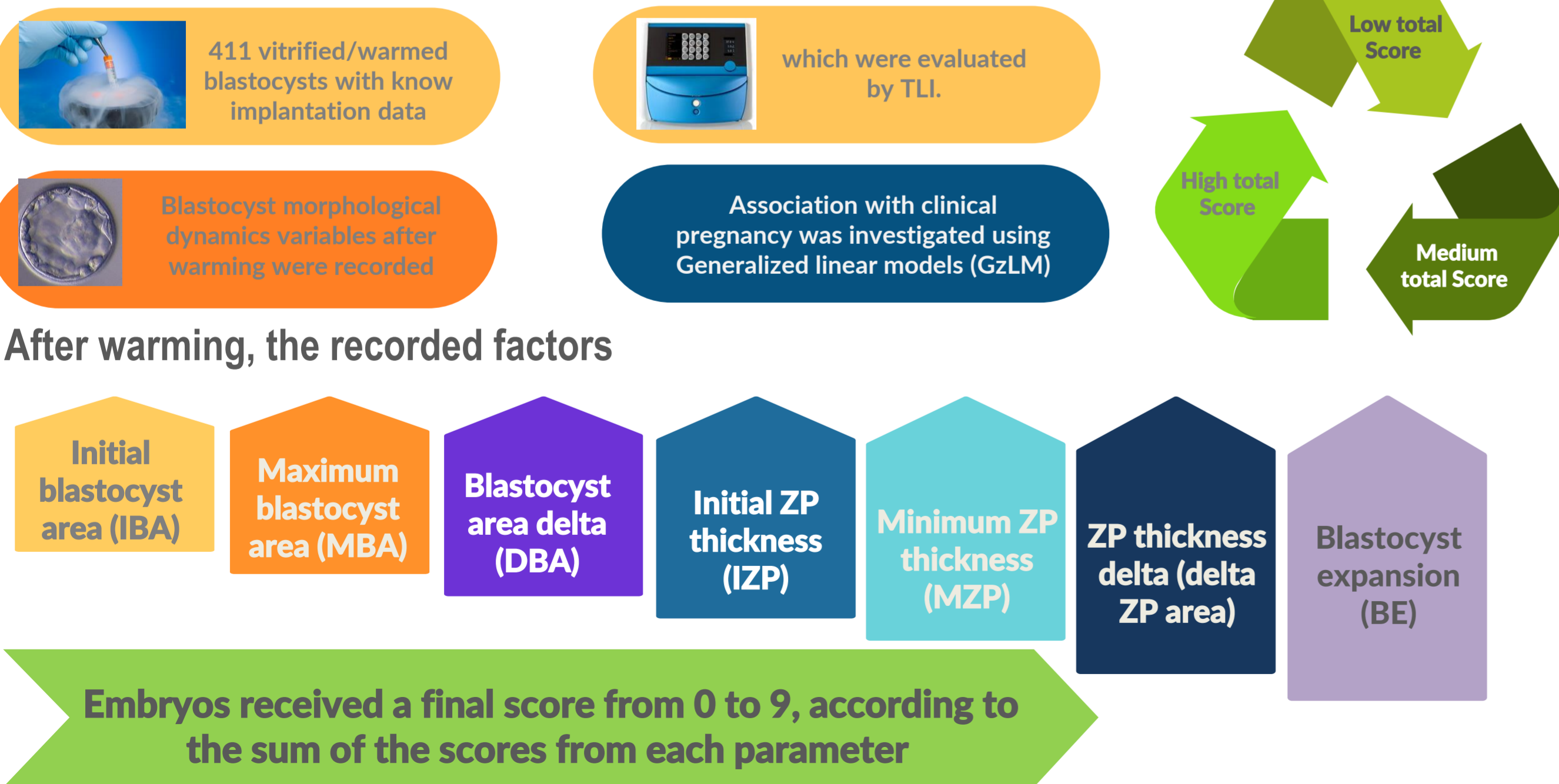


## INTRODUCTION

Embryo cryopreservation has become a pivotal component in assisted reproduction. Throughout vitrification and warming processes, embryos face considerable challenges. Historically, the evaluation of fresh blastocysts has relied on the examination of morphological features and the assessment of blastocoel expansion, trophoctoderm, and inner cell mass. However, for vitrified and warmed blastocysts, traditional evaluation may not suffice to predict implantation. The emergence of a TLI culture system has facilitated a comprehensive examination of embryo development. Therefore, the goal of this study was to investigate whether frozen-thawed blastocyst morphokinetics may provide an indicator for implantation.

## METHODS



## RESULTS

Regression analysis results for the impact of the individual after warming parameters on the implantation rate

| Parameter               | Average | SD     | B      | 95% CI       | P     |
|-------------------------|---------|--------|--------|--------------|-------|
| IBA ( $\mu\text{m}^2$ ) | 11095.0 | 3382.1 | -0.002 | -0.004–0.000 | 0.111 |
| MBA ( $\mu\text{m}^2$ ) | 17557.3 | 5948.5 | 0.001  | 0.000–0.002  | 0.215 |
| DBA ( $\mu\text{m}^2$ ) | 6462.2  | 4646.9 | 0.001  | -0.001–0.002 | 0.072 |
| IZP ( $\mu\text{m}$ )   | 14.3    | 4.0    | 1.040  | -1.220–3.299 | 0.314 |
| MZP ( $\mu\text{m}$ )   | 12.4    | 4.0    | -1.605 | -4.006–0.796 | 0.190 |
| DZP ( $\mu\text{m}$ )   | 1.9     | 2.1    | 1.554  | -0.521–3.610 | 0.143 |

Comparison of maternal and oocyte ages, implantation, and miscarriage rates between embryos in the low total score, medium total score, and high total score groups

| Score Groups             | Low             | Medium          | High Score      | P value |
|--------------------------|-----------------|-----------------|-----------------|---------|
| Maternal age (years old) | 37.8 $\pm$ 5.3  | 37.2 $\pm$ 5.2  | 37.4 $\pm$ 5.7  | 0.743   |
| Oocyte age (years old)   | 34.9 $\pm$ 4.9  | 34.1 $\pm$ 4.7  | 33.7 $\pm$ 5.2  | 0.229   |
| Implantation rate (%)    | 34.8 $\pm$ 5.3a | 35.9 $\pm$ 5.2b | 39.7 $\pm$ 5.2c | <0.001  |
| Miscarriage rate (%)     | 10.0 $\pm$ 4.2  | 13.2 $\pm$ 4.1  | 5.1 $\pm$ 2.9   | 0.239   |

## CONCLUSIONS

The blastocyst behaviour after warming, together with the previtrification embryo classification may provide important information for selecting the best embryo for transfer.