



The Number of Children Living at Home and the Duration of Embryo Cryopreservation are Significant Risk Factors for Cryopreserved Embryo Abandonment

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DISCLOSURE



- None of the authors have any conflicts of interest to disclose

CONFLICT
Of Interest



LEARNING OBJECTIVES



Participants should be able to:

1. Define cryopreserved embryo abandonment
2. Identify patient characteristics that are associated with an increased risk of human cryopreserved embryo abandonment





Introduction

- Approximately 1/3rd of all in vitro fertilization (IVF) cycles result in excess cryopreserved embryos*
- Approximately 1/3rd of all cryopreserved embryos will be discarded or abandoned**
- Antecedents of embryo abandonment are poorly understood
 - Single small retrospective study (n=11) failed to find any risk factors***

The purpose of this study was to compare patient characteristics of those who abandoned their embryos to those that made other final disposition decisions

*Bangsbo S, et al., 2004, Lyster AD et al. 2010

**Van Voorhis B et al., 1999

***Walsh AP et al., 2010





Embryo Abandonment

- Embryo abandonment defined
 - By what the practice states in the consent & state contract law
 - Non-payment of storage fees and/or
 - Non-communication of disposition decisions
 - After due diligence (phone calls/emails/registered letters) without response, we declared embryos abandoned 90 days from payment due
 - ASRM suggests it is reasonable to discard abandoned embryos after 5 years of no contact*
- Essentially all practices have or will have abandoned embryos
 - Medical-legal concerns
 - Growing problems with practice sales and mergers

*Ethics Committee of ASRM, 2013

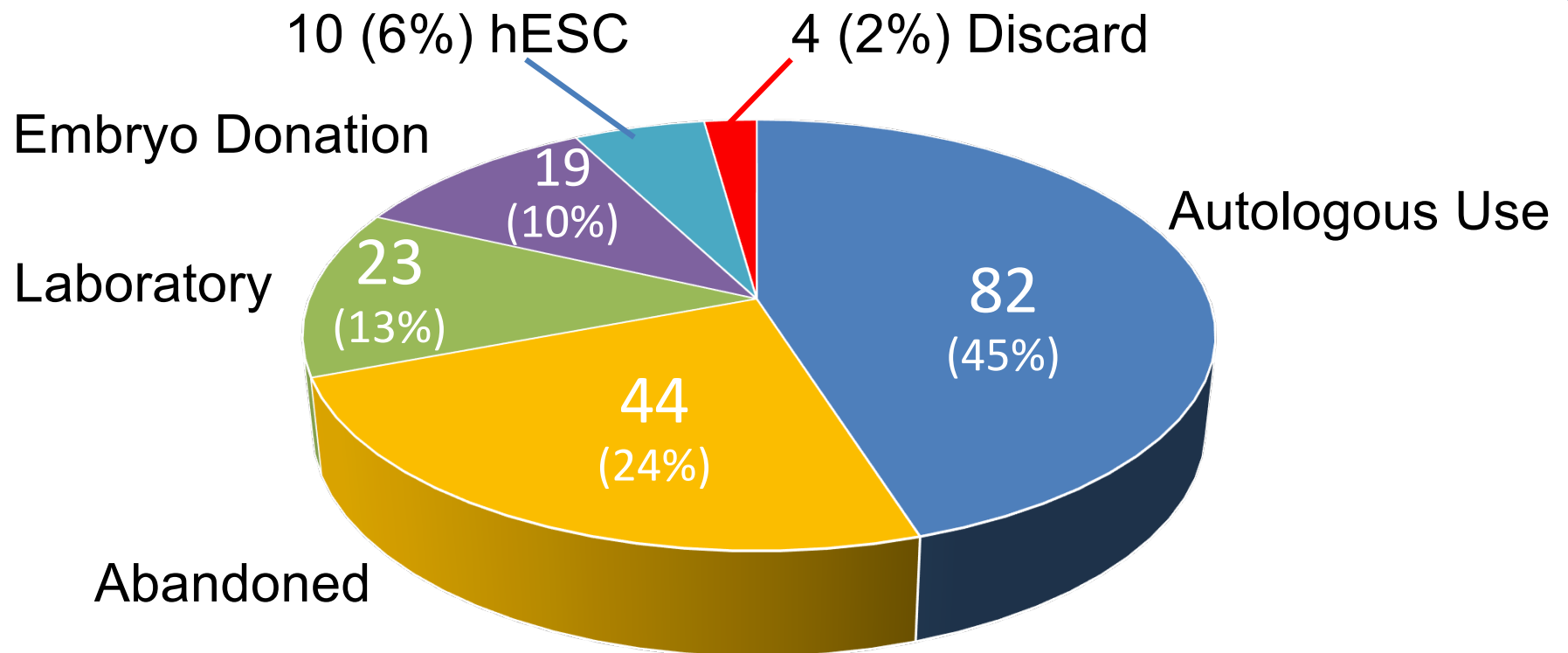


Materials & Methods

- Retrospective case-controlled study
- Private reproductive endocrine practice
- Examined those who made cryopreserved embryo disposition decisions from 2007 – 2013, inclusive (N = 182 chart sets)
 - 174 F-M, 4 F-F, 3 singles, 1 M-M
- Parametric & nonparametric statistical analyses
 - t-test, weighted least squares regression
 - ANOVA
 - Chi-square test for independence
 - Power analysis suggested a sample size of 85 would yield an 80% power of finding a significant difference at the $\alpha = 0.05$.
- IRB waiver granted

Materials & Methods (cont.)

- Abandoned, n=44 (24%)
- Other disposition decisions, n=138 (76%, control group)



Distribution of Disposition Decisions

132 Data points Examined per Chart Set (Patient/Partner)



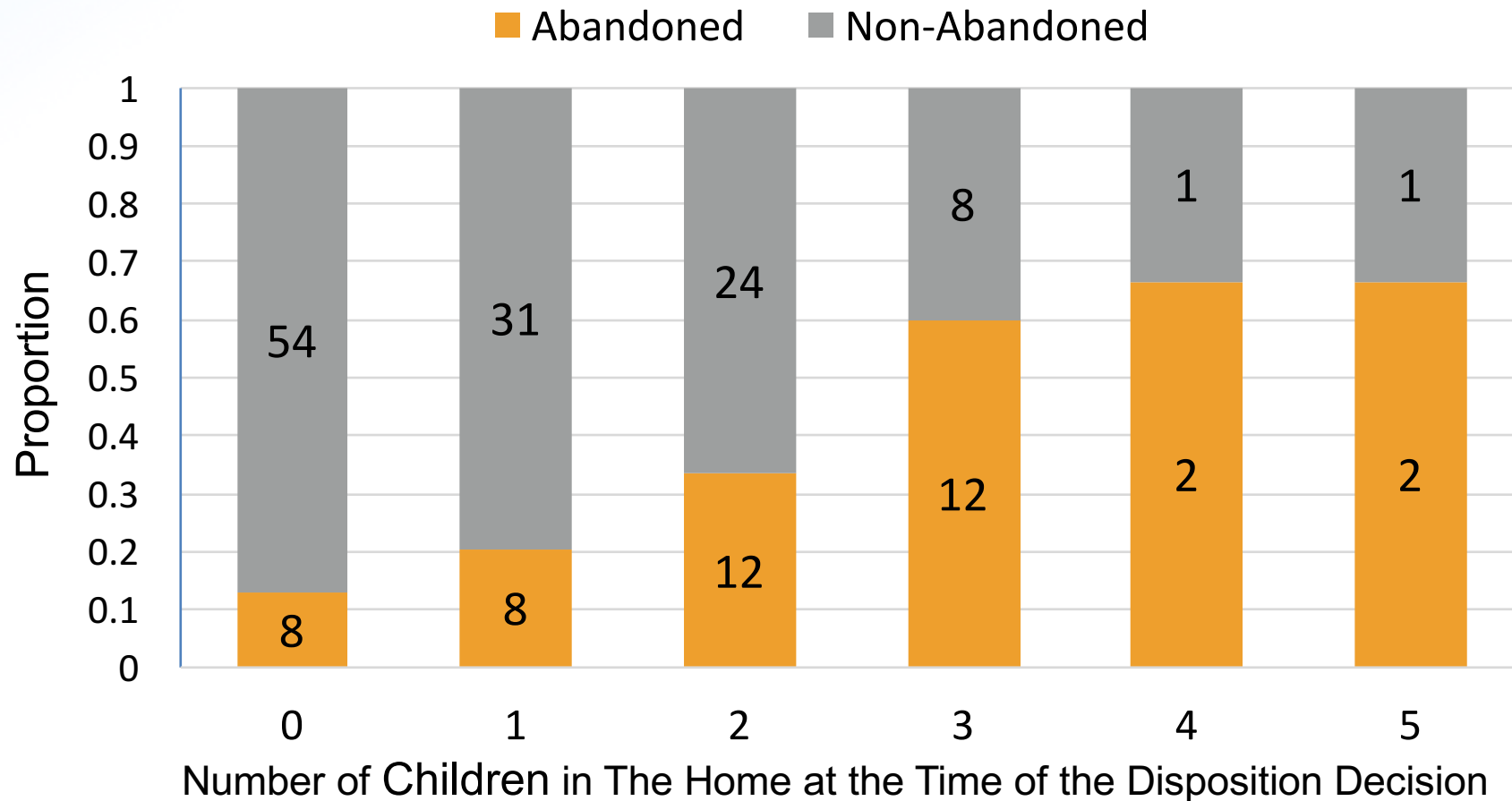
- Demographics
- Obstetrical histories
- Surgical histories
- Infertility histories
- Medical/Psychological illnesses
- Financial data
- Embryology data
- Disposition decisions



Did an Increasing Number of Children in The Home Influence the Risk of Embryo Abandonment?



*As the number of children in the home increased, so did the risk of embryo abandonment**



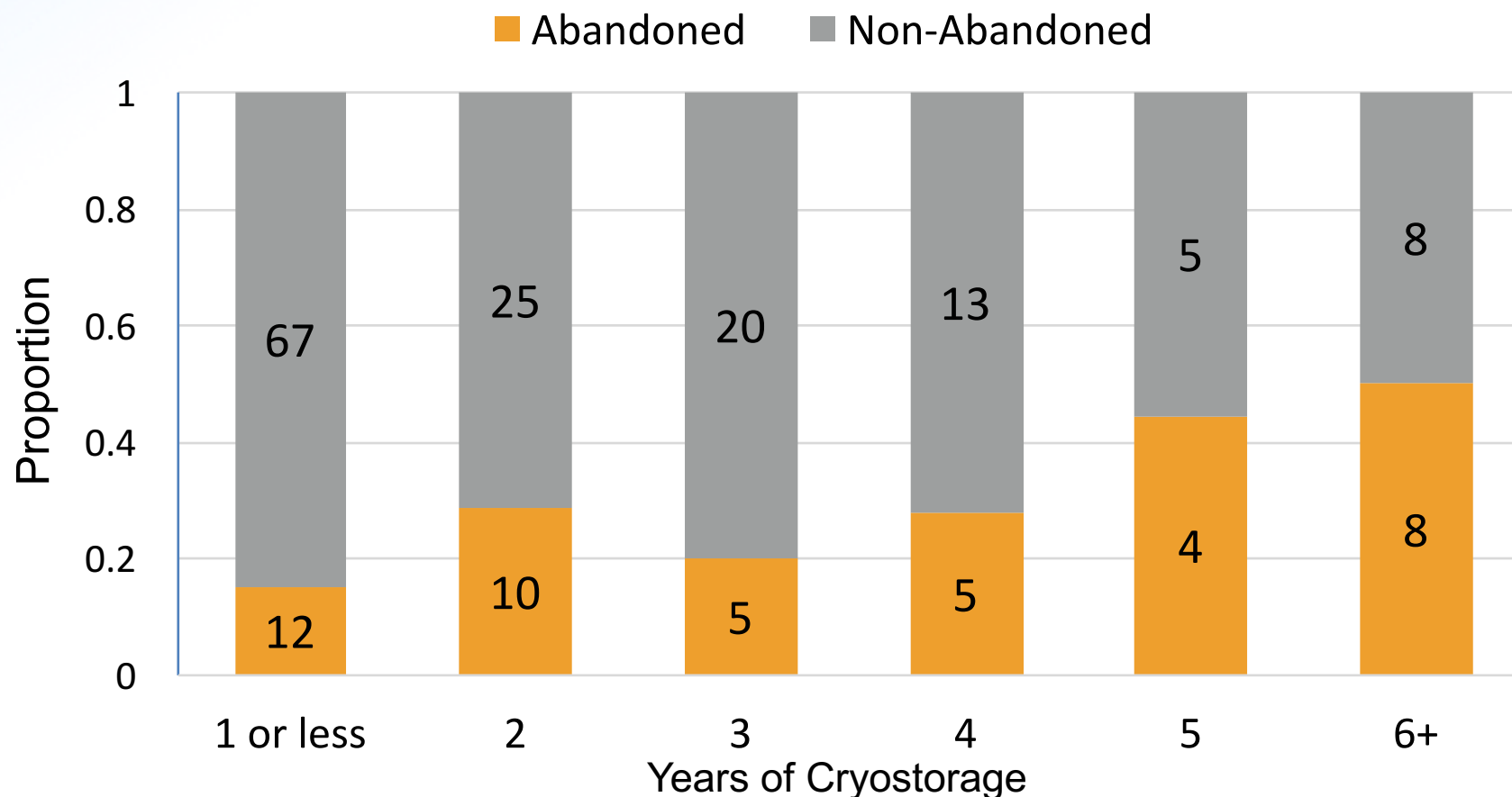
*($r=0.30$, $t_{161}=3.920$, $p<0.0001$)



Did an Increasing Duration of Cryostorage Influence the Risk of Embryo Abandonment?



*As the duration of cryostorage increased, so did the risk of embryo abandonment**



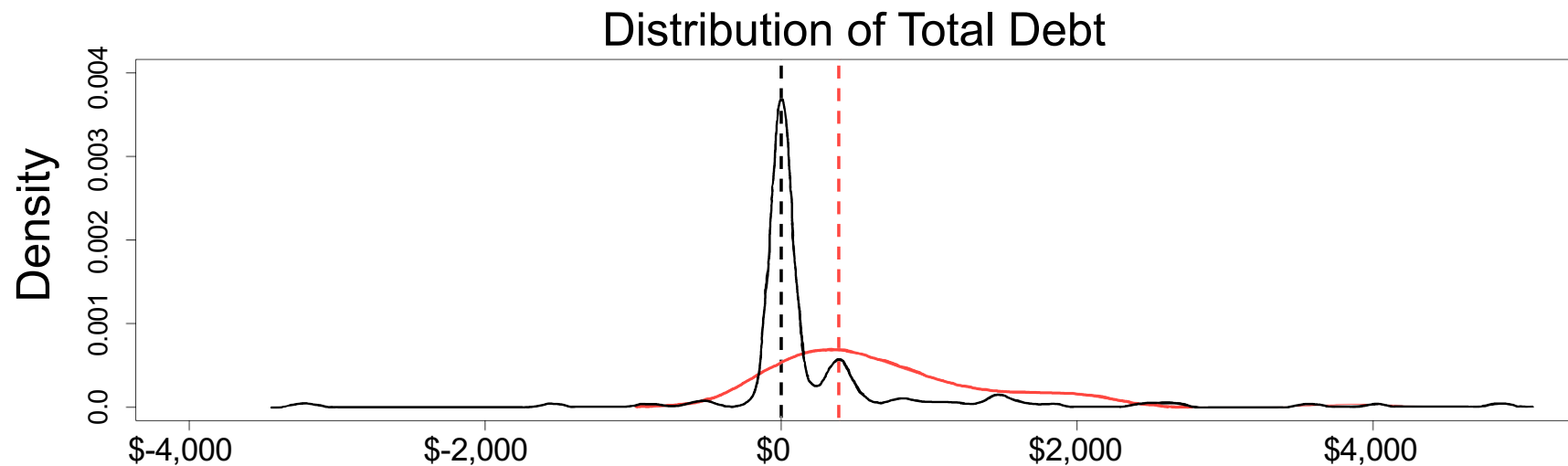
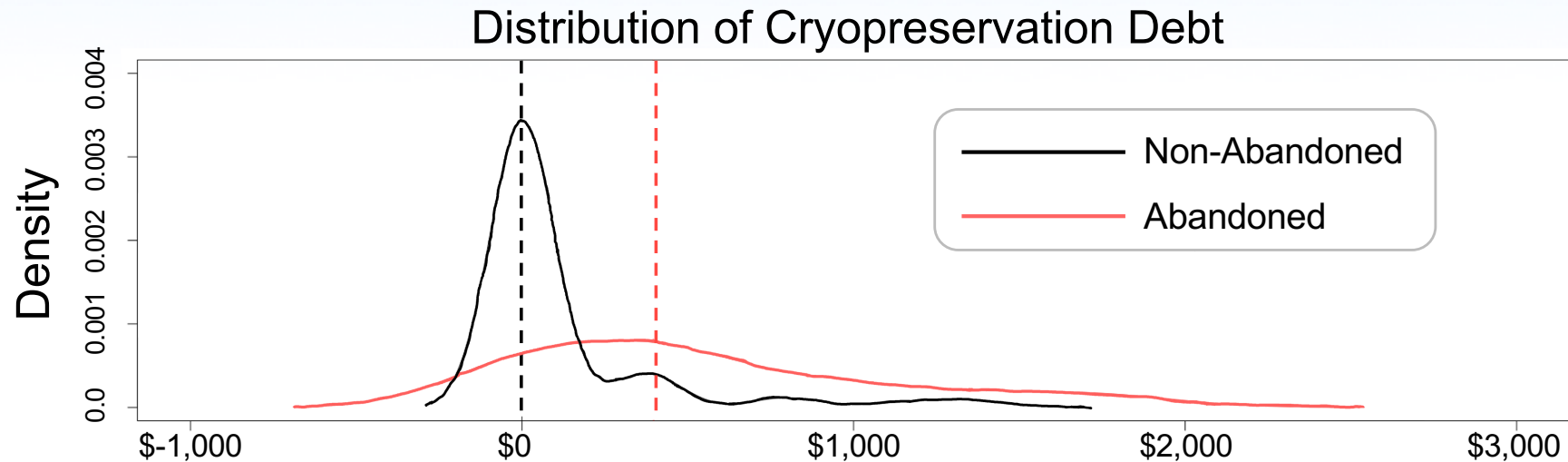
For each year of paid cryostorage fees, the risk of embryo abandonment increased by 7.8%

($F_{1,8}=74.17$, $R_{adj}^2=.89$, $p<.0001$)

*($r=0.23$, $t_{180}=3.15$, $p=0.0009$)



Did the Debt Owed to The Practice Increase the Risk of Embryo Abandonment?

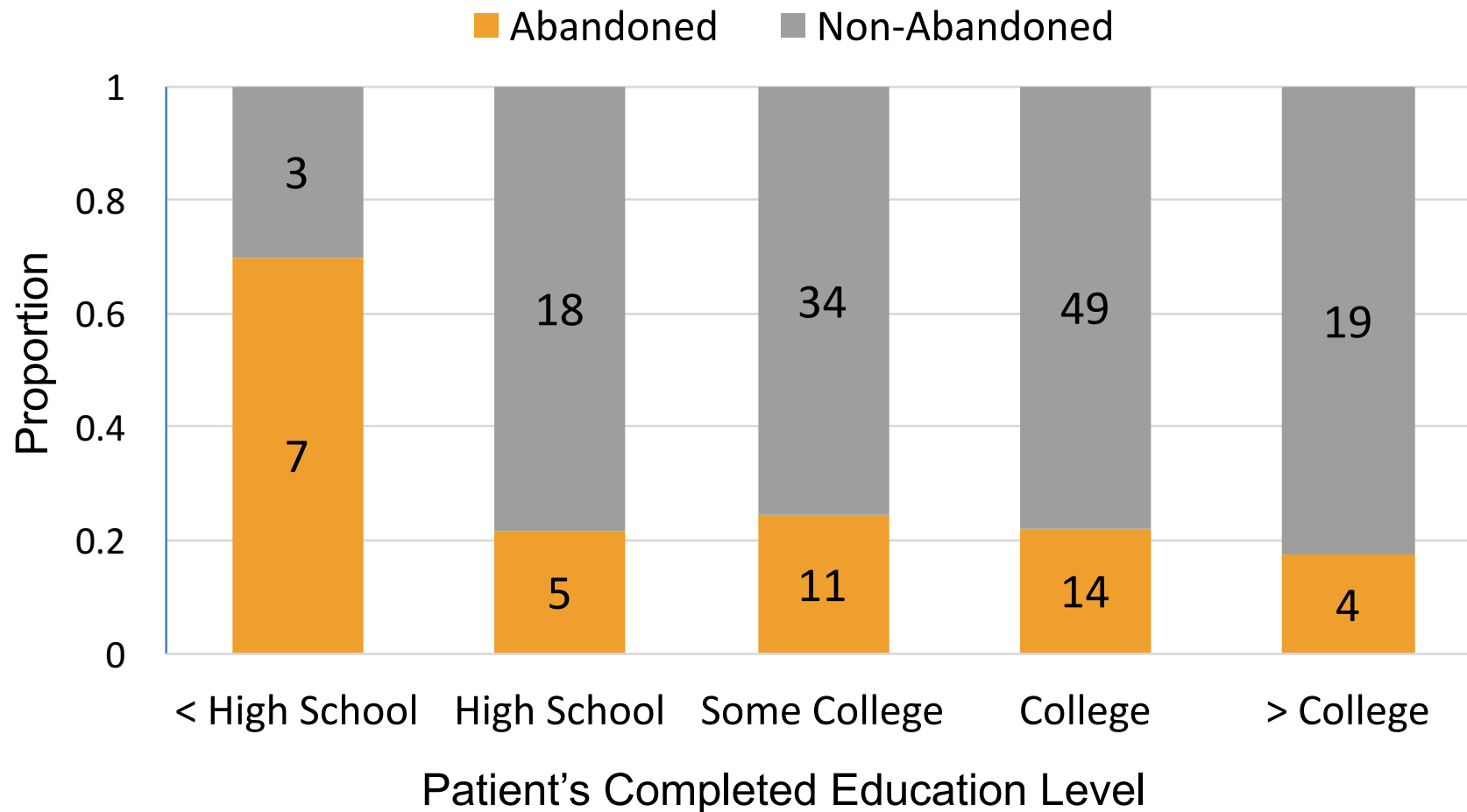


Patients that abandoned their embryos owed significantly more cryopreservation and overall debt to the practice ($r=0.23$, $t_{180}=3.21$, $p=0.008$)

Did the Patient's Completed Education Level Influence the Risk of Embryo Abandonment?



*The patients with the lowest education level were significantly more likely to abandon their embryos**



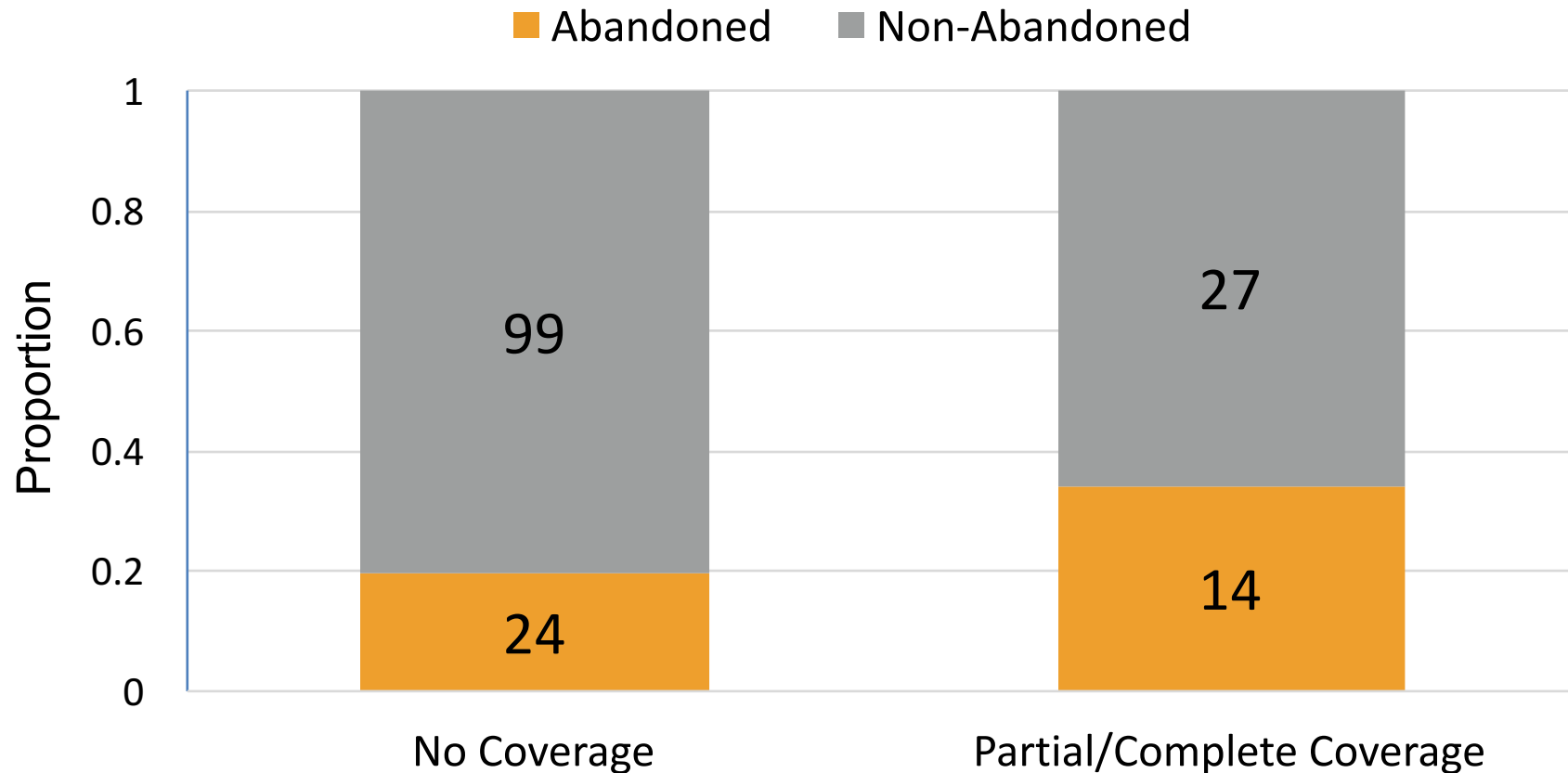
*($r=-0.19$, $t_{162}=2.46$, $p=0.007$)



Did Insurance Coverage Influence The Risk of Embryo Abandonment?



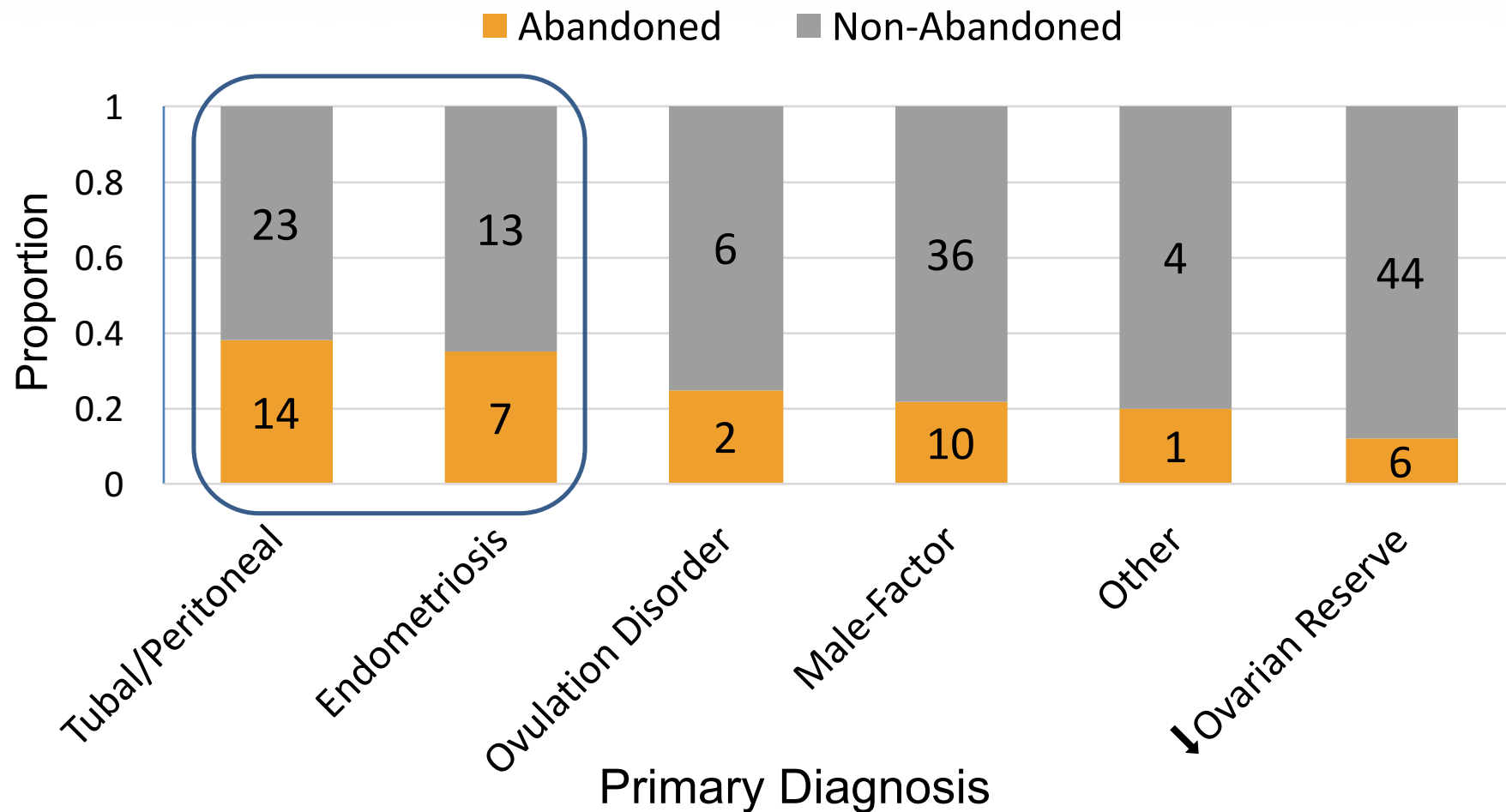
40/162 (25%) of the patients had partial/complete IVF insurance coverage



Patients who had partial/complete IVF insurance coverage were significantly more likely to abandon their embryos ($r=0.15$, $t_{162}=1.87$, $p=0.032$)



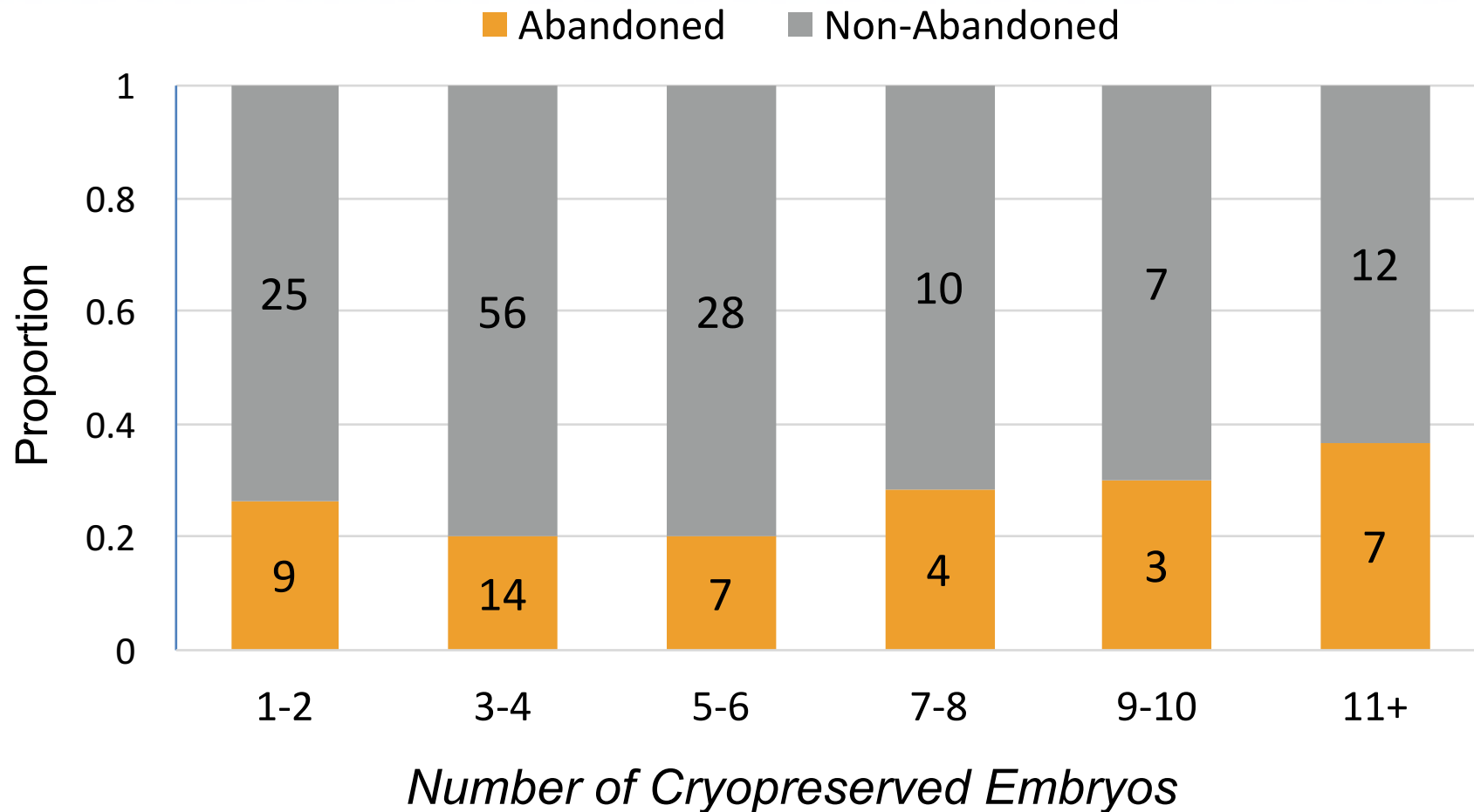
Did the Infertility Diagnosis Influence the Risk of Embryo Abandonment?



Patients with a diagnosis of tubal/peritoneal or endometriosis were significantly more likely to abandon their embryos ($\chi^2=8.74$, $p=0.032$)



Did the Number of Cryopreserved Embryos Influence the Risk of Embryo Abandonment?



The risk of embryo abandonment significantly increased as number of cryopreserved embryos increased ($r=0.13$, $t_{180}=1.74$, $p=0.042$)



Discussion



- Numerous antecedents of embryo abandonment were identified
- Rationale to each of the findings is suggested:
 - With additional children in the home, goals may have been fulfilled and discretionary income unavailable
 - The longer the duration of storage, it was likely that patients were conflicted regarding their disposition decision
 - If debt was owed to the practice, perhaps they were embarrassed and/or unable to reimburse
 - Those with a less education may have viewed their embryos differently or did not have the income to perform a FET



Discussion



- Rationale (cont.):
 - Perhaps patients with IVF insurance coverage may not have the same emotional investment in their cryopreserved embryos
 - Those patients with tubal/peritoneal or endometriosis diagnoses may have been “burned out” because of symptoms and/or surgeries
 - As the number of cryopreserved embryos increased, the patients may have felt overwhelmed with their disposition decision
- Interview those that abandoned to understand their reasons
- With these risk factors, perhaps future intervention will guide patients to consider other disposition decisions
- Prospective longitudinal study suggested





Study Weaknesses & Strengths

- Weaknesses
 - Retrospective study
 - Incomplete charts/information
 - Single physician private practice
 - Non-mandated state
- Strengths
 - Largest study to date with many data points examined
 - Practical applications (i.e., patient data available to most IVF practices)
 - Statistical findings very significant





Conclusions

- Abandoned embryos present logistical, ethical and legal dilemmas
- The following risk factors were correlated with an increased risk of cryopreserved embryo abandonment
 - More children in the home
 - Prolonged cryostorage
 - Increasing debt to the practice
 - Lower education level
 - Partial/complete IVF insurance coverage
 - Primary diagnosis of tubal/peritoneal or endometriosis
 - Increasing number of embryos cryopreserved

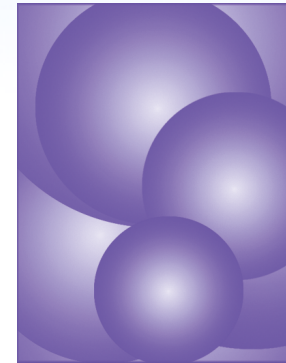
*For each year of paid cryostorage fees,
the risk of embryo abandonment increased by nearly 8%*



Thank you to those who made this study possible



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