

Effect of Presenting Survival Information as Text or Pictograph During Periviable Birth Counseling

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Study Protocol

- Background
 - In the event of perivable birth, or delivery between 22-24 weeks gestational age (GA), professional guidelines (e.g., from the American College of Obstetricians and Gynecologists) recommend parents participate in decision making for either intensive care or palliative care for the baby.
 - It has been assumed by clinicians that the baby's chance of survival would influence parents' treatment choice. In a 2020 study published in JAMA Pediatrics, Kidzun et al. randomized women to see either a 30% or 60% chance of survival, and they found the chance of survival did not affect their hypothetical perivable birth treatment choice.
 - However, Kidzun et al. did not assess participants' comprehension of the chance of survival and could therefore not address the possibility that participants simply did not understand the chance of survival.
 - Their study also provided the survival information as only text information. Health risk communication recommendations specific that pictographs (also known as icon arrays) are a preferred method for communicating such information.
 - Finally, the Kidzun et al. study did not address the role of intuitive beliefs in decision making. Intuitive beliefs (i.e., intuition or gut feelings) have been reported by families as influential in medical decisions.
- Aims
 - We sought to determine if presenting a physician's estimate of a 30% or 60% chance of survival would affect treatment choice and if the format in which those probabilities are presented would affect treatment choice.
 - We were also interested in what participants would recall about the physician-provided estimate of survival and how their intuitive beliefs about their baby's chance of survival may be different from that estimate.
 - We aimed to explore if recall of physician's estimate or intuitive beliefs were better predictors of treatment choice.
- Methods
 - Design
 - Factorial experiment
 - Between-subjects
 - Participants randomized (1:1) to 1 of 6 groups:
 - | Probability Communication Format | Physician's estimate of survival | |
|----------------------------------|----------------------------------|-----|
| | 30% | 60% |
| Text-Only | 1 | 2 |
| Static Pictograph | 3 | 4 |
| Iterative Pictograph | 5 | 6 |

 - Hypothetical case scenario delivered through the internet survey tool Qualtrics
 - Participants
 - Recruited online via internet-based recruitment company Dynata
 - Received points redeemable for gift cards or charitable donations
 - Women in the U.S. of child-bearing age (18-50 years old)

- Vignette
 - Case was adapted from Haward et al. (2008)
 - Gave participants:
 - General prematurity information
 - Information on birth at 22 weeks GA
 - Description of intensive care and palliative care
 - Adapted from Kidszun et al (2020)- randomized participants to 30% or 60% chance of survival
 - Written information
 - Out of 10 babies born in this situation and given intensive care, [3 or 6] would survive, and of those, [1 or 2] would survive without a disability.
- Probability communication format
 - Next page repeats the chance of survival and disability for all groups.
 - Randomized to the chance of survival and disability as:
 - Text only: Repeat of the text information seen before
 - Static pictograph: A set of 10 baby icons, each colored differently depending on their outcome.
 - Iterative pictograph: A sequence of 10 pictograph images. Each image is similar to the static pictograph, the outcomes were randomly shuffled and an icon bordered in orange represented the participant's baby. The goal was to allow participants to experience the outcomes if 10 such decisions were made for intensive care in this situation.
- Outcome measures
 - Treatment choice
 - Asked to choose if they would want intensive care or palliative care for their baby in this situation.
 - Recall of physician estimate
 - "Based on the information the doctor showed you earlier, for every 10 babies born at 22 weeks and given intensive care, how many would survive?"
 - Answered on a scale from 0-10.
 - Based on their response for the chance of survival, they were asked a follow up question about how many of those that survive would go on to show a disability.
 - Intuitive beliefs
 - Adapted from Windschitl (2003)
 - "Assume again that your baby was born prematurely at 22 weeks and given intensive care treatment. The doctor gave you the same information you read earlier. At a gut level, what would you believe is *your own baby's* actual chance of survival?"
 - Answered on a sliding scale from "No chance of survival" to "Definitely will survive"
 - Automatically converted to a 0-100 scale in Qualtrics
 - Participant characteristics collected:

- Preference for medical autonomy vs. medical paternalism
 - Adapted from Haward et al. (2008)
- Prioritization of sanctity vs. quality of life
 - Adapted from Haward et al. (2008)
- Health literacy
 - Brief Literacy Screen
- Numeracy
 - Subjective Numeracy Scale (SNS-3)
- Religiosity
 - Duke University Religion Index (DUREL)
 - 3 subscales:
 - Organizational religiosity (e.g., service attendance)
 - Nonorganizational religiosity (e.g., prayer)
 - Intrinsic religiosity (i.e., subjective religiosity)
- Number of children
- Previous exposure as a parent to the NICU
- Race
- Ethnicity
- Education
- Year of birth
- Statistical analysis:
 - Power analysis
 - Estimated 60% of participants choosing intensive care
 - Detecting a 15% difference between study groups with at least 80% power and alpha of 0.05
 - Sample size of 1,050 necessary
 - Comparing 2 groups:
 - Fisher's exact test to compare categorical variables
 - Mann-Whitney test to compare continuous variables
 - Comparing >2 groups:
 - Fisher's Freeman-Halton to compare categorical variables
 - Kruskal-Wallis to compare continuous variables
 - Classification and regression tree analysis (CART)
 - Nonparametric, multivariable modeling approach to identify interrelationships and possible thresholds
 - Assessed the explanatory power of experimental variables and participant characteristics on treatment choice (binary outcome)
 - Optimized by Gini method
 - 10-fold cross validation
 - Split criteria of 10 for the parent node and 5 for the terminal nodes