

General comments

Section 4 wants to criticize the argument made in court when using Chadwick et al.'s quantity to determine whether a head trauma in a child was caused by accidental short fall or shaking and other abuse causes. The author first states that, even if a death from short fall has small probability, positive probability still makes the event possible. Then she suggests to restrict the population of investigation to a smaller subset of individuals, using the information that a child had a head trauma and died/not died. She also criticizes that the quantity currently used in court does not compare the probability of the event of interest with the probability of other competing hypotheses. In fact, as she says, "there might be other causes for the child injuries" and it might be interesting to compare how much probable they are compared with a short fall cause. Following the same idea, she then focuses on the specific cause of head trauma due to shake the baby, and she suggests to compute how likely is that the baby was shaken given the evidence compared to the fact that the baby was not shaken given the same evidence. She mathematically refers to this quantity as the ratio between two conditional probabilities.

I like the structure of the paper a lot. I think it's very clear the logic behind the investigation: what motivates the critique to the Chadwick et al.'s quantity used in court, and what the author suggests to use in the future to deal with similar cases. What I find interesting in the problem, and I think the author could mention, is that the event : "Number of infants who have died from short fall in a specific year" is based on counting the number of infants that the court, in the past, declared as "death caused by short fall". In other words, the quantity used at the moment is itself affected by previous sentences. On the other hand, the denominator is not influenced by any people decision, it is in fact the count of infants born in those 5 years. Following this line, I would emphasize that the quantities that the author suggests and computes in the ratio are more comparable.

Specific comments

- Section 4 the intro: I think you missed the verb here. Probably you mean something like "Determining which specific head trauma a child had is a difficult task"? But I'm not sure.
- Section 4.1 line 4 "short".
- Section 4.2 after eq 6, I would define the event "Evidence" writing

something like: “where Evidence = { The infant has a head trauma and died }.” Because this event is also used in the rest of the paper as well so it could be nice to have its definition.

- 4.3 I would put in the same sentence “is calculated in isolation : the authors calculated....”.
- Pag 8, beginning Eq. “(8)”.