

1- My name is mariane sentenac and I am going to talk about one of the demonstration projects performed on the platform which aimed to use all the potential of the RECAP cohorts to explore the relationship between social circumstances and general cognition in children born VPT

2- The impact of the socioeconomic circumstances of the family on the child development is doubly important. We know first that social disadvantage is a risk factor of very preterm birth, and also that very preterm infants face higher risks of health and neurodevelopmental problems than those born at term. We also know that neurodevelopment is negatively impacted by a social disadvantaged environment in the general population. Although there is a lot of empirical evidence on the association between parental educational level and cognition in childhood, there are few studies on the very preterm population.

3- We have used the data from the RECAP platform to investigate the association of maternal education level, which is the most common indicator of social difference used, with short- and longer-term cognitive outcomes in childhood,

The amount of the data available on the platform gave the opportunity to consider examining the potential effect of moderating variables, such as country, the period in childhood, and the level of prematurity

For this study, we finally selected 15 eligible population-based cohorts in 13 countries, with a measure of maternal education level during childhood and at least one assessment of cognition in childhood.

4- For this study we used a meta-analytical approach based on aggregated data to illustrate what is possible to do with the platform.

What is a meta-analytical approach? Meta-analysis allows a statistical combination of the results of several individual studies, and for this reason is considered to give a higher level of scientific evidence than individual studies. The main advantage is that meta-analyses improve the precision of estimates. But there are also limitations. The variation or heterogeneity between individual studies may be useful to study how clinical and methodological aspects of studies relate to their results. But for synthesizing results on socioeconomic circumstances, heterogeneity is a problem, mainly because of the large diversity of measures. The possibility of harmonising the measure of social status over the RECAP cohorts provides the opportunity to go beyond these limits.

5- In RECAP, we have implemented this approach by providing all 15 participating cohorts with a standardized iterative protocol. During this 4-step process, we have collected from each cohort, aggregated and harmonized results that can be combined into summary estimates.

6- A crucial step of this protocol was the harmonization of the variables measuring maternal education. Given the heterogeneity in these variables between the cohorts, in terms of national systems, definitions used, and the variability related to the period, we used the International Standard Classification of Education (ISCED) from UNESCO as a common definition to create harmonized categories by mapping each cohort's educational variable into one of nine levels, which were then grouped into three categories representing a low, medium and high level of education.

7-Here is an example of the harmonization of the level of maternal education in 3 cohorts carried out in 3 different countries, at different times and using different definitions. This gives you an idea of the heterogeneity related to the design of the cohorts.

8-This table also illustrates the heterogeneity in the characteristics of the cohorts regarding the inclusion criteria on GA and BW, years of birth and the follow-up rates.

9-The distribution of the level of maternal education based on the harmonized variable was very heterogeneous from one cohort to another, with a proportion of mothers with high education varying from 6.1% to 47.6%

10-The effect measure was expressed as the standardized mean difference (SMD) in cognitive scores between groups defined by maternal educational level, using the high education level as the reference. SMD is an effect size statistic that applies to contrast two groups on their respective mean scores that is not measured the same across the studies. A random-effect meta-analysis was performed to compute pooled SMDs and to take into account the heterogeneity. Meta-analyses were performed by age group to explore all the information available in the cohorts.

We have also quantified the heterogeneity between cohorts using the I² statistic; and investigated potential sources of heterogeneity with subgroup analyses.

11-The first result presented on these slide corresponds to the comparisons of cognition between children whose mothers had low education compared to children whose mothers had high education, during infancy. First, we observed that the SMD of most of cohorts goes in the same direction with a value below zero. The pooled SMD was negative meaning that children whose mothers had low education scored lower on cognitive evaluation than those whose mothers had high education, with a difference of 0.32 standard deviation. And the I² greater than 50% indicates a high heterogeneity between cohorts.

12-Regarding the evaluation performed during early childhood, the pooled SMD was slightly larger than in infancy, reflecting a larger effect of maternal education on cognitive outcomes

13-And in later childhood, the pooled SMD computed on 6 cohorts with information available at this age were comparable to the effect size during early childhood.

14-We also performed subgroup analyses by gestational age to investigate whether the degree of prematurity could moderate the relationship between maternal education and cognition in childhood, with the hypothesis that the impact of maternal education on cognition could be attenuated for children born extremely preterm. But this hypothesis was not confirmed by our results with a similar effect found for GA sub-groups.

15-In summary, we found that children of mothers with low education scored lower on measures of cognition. The substantial heterogeneity between cohorts was not completely explained. We did not provide strong evidence for difference in effect sizes according to age at assessment, and no evidence for difference in effect sizes by level of prematurity

16- Our findings suggest that there is a universal effect of maternal educational level on cognitive skills in children born very preterm, whatever the setting, era, level of prematurity, with disparities less marked in infancy. These results are important for practices and future research on children born very preterm. First follow programs should integrate the information about the level of maternal education and thus provide support for creating a stimulating environment favourable to the child's development. Future studies using the RECAP Preterm platform will go further in investigating associations with other socioeconomic factors and whether access to early education and services in schools may mitigate these effects.

17-Thank you for your attention and please find on this slide some interesting reading linked to this presentation.