**Statistical Analysis**

Finally, although in most of the chi-square tests for proportions no significant differences were found between the groups, in some cases a p-value lower than the 5% significance level was observed. In these cases, significant differences between groups were found in variables such as "Language the child speaks", "How old was your child when he/she first saw someone for dental care?", "Parent's health of gums and teeth", and "Employment status". However, these differences were to be expected due to the nature of these variables and their impact on oral health. Therefore, it is concluded that these results are not surprising and confirm the importance of considering these factors in the planning and delivery of dental care services.

***Survival model***

The Kaplan-Meier survival model is a statistical technique widely used in different fields of research, including dentistry. In this regard, this model has been applied to evaluate the effectiveness of ART and AMALGAMA treatments in relation to the presence of caries in patients.

In this study, the Kaplan-Meier survival model was applied with the support of R statistical software version 4.4.2. R is an open-source statistical programming language and environment that allows different data analyses to be performed, including survival analysis. The use of this software allows greater efficiency in data analysis and greater precision in the results obtained.

*Summary of the model applied for the 2 groups (ART vs AMALGAM)*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Time* | *n.risk* | *n.event* | *n.censor* | *Surv* | *Std.err* | *Upper* | *Lower* | *Strata* |
| *1* | 24 | 98 | 2 | 96 | 0.98 | 0.01 | 1.00 | 0.95 | ART |
| *2* | 12 | 111 | 1 | 0 | 0.99 | 0.01 | 1.00 | 0.97 | AMALGAM |
| *3* | 18 | 110 | 1 | 0 | 0.98 | 0.01 | 1.00 | 0.96 | AMALGAM |
| *4* | 24 | 109 | 2 | 107 | 0.96 | 0.02 | 1.00 | 0.93 | AMALGAM |

The summary indicates that the survival model shows a high rate of rightward censoring, which means that there is a high probability that patients will experience failures after the time of the experiment.

A Cox model was fitted to assess whether the presence of other variables significantly affects the results, but the results obtained were similar in terms of the survival rate and no significant change in the conclusion was observed. Therefore, it was concluded that the Kaplan-Meier survival model provides an adequate and sufficient assessment of the effectiveness of ART and AMALGAMA treatments in relation to the presence of caries in patients.

Imagen que contiene Gráfico

Descripción generada automáticamente

Regarding the specific results, the survival curve for ART treatment presents a very high survival rate, with only two events recorded and a 95% confidence interval suggesting that ART users would not present caries after 2 years in conditions equal to those of the model. On the other hand, the survival curve for AMALGAMA presents more caries cases in different time periods, but the survival rate is also high due to the small amount of data of patients who went from a healthy state to presenting caries in the intervened teeth.

In addition, a Log-Rank test was performed to compare the survival rates of ART and AMALGAMA treatments. The results indicate that there is no significant difference between the survival rates of both treatments, with a p-value of 0.5 and a Chi-square of 0.5 in one degree of freedom.

In conclusion, the Kaplan-Meier survival model is a useful technique for evaluating the effectiveness of dental treatments in the prevention of dental caries. The results suggest that both ART and AMALGAMA are effective in preventing dental caries, although ART appears to be safer and more reliable due to its lower failure rate. However, more research is needed to evaluate the long-term effectiveness of these treatments.

# **References**

Morales, J. (2018 ). *Modelos de supervivencia*. Obtenido de Universidad Miguel Hernández de Elche: https://rstudio-pubs-static.s3.amazonaws.com/375297\_34390ade0ddb4dd2bbe3bf1abf884dfe.html#ejemplo\_c%C3%A1ncer\_de\_pulm%C3%B3n

The R Project. (2020). *The R Project*. Obtenido de https://www.r-project.org/

Urdinez, F. (17 de Abril de 2021). *Capítulo 9 Modelos de supervivencia*. Obtenido de https://arcruz0.github.io/libroadp/surv.html