Second client meeting notes

1. Main objective
    a. We should include the reason why we use a t-test (because it's a large sample size and we assume CLT).
        i. If we consider the response variable a categorical variable, shall we use non-parametric instead
    b. Choosing the dataset -> We want the client to choose, so we sent the email to the client, waiting for the response
        i. Should we subset the data? Do we want to disregard the observer scores and consider the FPS score as the only target response?
        ii. How to best subset the data? Should we change how to subset the data? For example, matching FPS-R score 2 to slight pain instead of none?

2. Secondary objective one
   Linear regression
    a. In the summary table, we should include all variables so that we can observe their coefficients, not just those that are statistically significant. Additionally, we should include the standard error for each variable.
    b. Later in our second report, we should include the linear regression model and a scatterplot of points with lines per categorical group (Practitioner Resident and Anaesthetist).
    c. We will redo the linear regression with two groups: one regression line for the control group and another for the study group. Then, we will compare the coefficients.
        i. Especially testing for change in coefficient for Age, Number of IV-attempts, Needle gauge
    d. We will do a two-way ANOVA, 1 category: control/study group, 2nd category: Age group, (maybe 5-11,12-16 but we should double-check the sample size, making sure these groups are roughly equal)

   Number of IV-attempts different for the two groups?
    a. Check from linear regression
    b. If needed maybe a test with groupings (IV attempt = 1 and IV attempts = >1)

3. Secondary objective two
   Side effects: Only two charts
    a. 1 pie chart: overall effects: 95% no side effects, 5% side effects
    b. 1 bar chart/frequency table: categories of side effects: redness only, itchiness only, redness+itchiness, puffiness, pain = 100% (240 patients)

Individual:

Maggie - We demonstrated that as age increased, the pain level decreased, while an increase in the number of IV attempts led to higher pain levels. Additionally, when the IV insertion was performed by a resident, it also increased the pain level. Although the client considered this common knowledge, having a model with numerical support was appreciated. However, as our research focuses on the disparity between Ametop vs. Ametop with vapocoolant spray, we will delve deeper into whether the use of vapocoolant spray affects the number of IV attempts and how different age groups respond to both the study and control groups.

Yimin - In the linear regression analysis, all variables will be included to observe their coefficients, providing a fuller picture of how each factor contributes to the model. Then, the data will be segmented into two groups—control and study groups—and a separate linear regression analysis will be conducted for each. After conducting separate regressions for the control and study groups, the coefficients of key variables (Age, Number of IV-attempts, Needle gauge) will be compared across groups. We also plan to include two-way ANOVA which will be conducted with two factors: the group (control/study) and age group. The plan includes potentially categorizing age into groups (e.g., 5-11, 12-16) to ensure that the sample size in each category is roughly equal.

Runhe - For the side effects analysis, we need to reduce the number of pie charts we have created. It was confirmed that the side effects were mainly caused by Ametop and not vapocoolant spray in the meeting with Dr. Scheepers. Thus, these two groups should not be separated. First, we should create a pie chart for the presence and absence of side effects, and then a frequency table for the combined side effects without separating them.

Fabiola - We need to conduct another analysis on the number of IV attempts. It's become clear, though not surprisingly, that pain levels rise with an increase in IV attempts. However, we're now interested in exploring whether the use of vapocoolant spray affects the number of IV attempts. The cooling effect of the spray might cause the skin to tighten and potentially make vein insertion more difficult. To investigate this, we will compare the coefficients of our linear regression model for the study group and the control group. If necessary, we may conduct further testing.