

Additional file 3:

Sensitivity analyses

Background

It was critical for the outcome assessment in the DIFFUSION trial to identify access to the video by a unique individual. However, it was impossible to distinguish access by the same person from access by a different person. Therefore, we created our own definition of 'access by a unique individual'. There were different patterns of definition and the outcome varied according to the pattern. The estimate of the intervention effect also varied based on the number of outcome events. Therefore, we conducted sensitivity analyses to see the range that the effect varied using two different definitions of an access by a unique individual: most conservative definition and most liberal definition.

Methods

The outcome was determined using the data from the four categories collected by the computer programme we prepared: ID number, IP address, type of device and date and time of access.

We estimated the possible largest effect of the intervention and the difference in the outcome between the two groups using the most liberal definition of sharing. Likewise, we estimated the possible smallest effect of the intervention and the difference in the outcome between the two groups using the most conservative definition.

Outcomes

Primary outcome: video sharing

Secondary outcome: number of views generated as a result of video sharing by each participant

Figure 1 shows different patterns of data from different categories. With the most liberal definition, we counted all as access by different persons (② in figure 1). With the most conservative definition, we counted it as access by different persons only if the data of IP address, date and time and type of device were all different (③ in figure 1).

Pattern	IP	Date & Time	Device
1	+	+	+
2	+	+	-
3	+	-	+
4	+	-	-
5	-	+	+
6	-	+	-
7	-	-	+
8	-	-	-

+: Same
 -: Different

Figure 1 Different patterns of data and definition of access

- ① **main analyses:** pattern 1 - 4 defined as “access by the same person” and patterns 5 – 8 defined as “access by different persons”
- ② **most liberal (sensitivity analyses):** all patterns defined as “access by different persons”
- ③ **most conservative (sensitivity analyses):** pattern 1 – 7 defined as “access by the same person” and only pattern8 defined as “access by different persons”

Data analyses

We conducted intention-to-treat (allocated video) and per-protocol (viewed video) analyses. We used a standard chi-squared test as the primary test of statistical significance of the effect of the intervention on video sharing and calculated risk ratio with 95% confidence intervals (CIs). We conducted a t-test and a Mood’s median test¹² to test the

statistical difference in the mean and median of the number of views generated as a result of video sharing by each participant respectively.

Results

Primary outcome

Based on the most conservative definition of sharing, we found that 18 (0.4%) out of 4,178 participants who were allocated to the intervention group shared the video, and 18 (0.4%) out of 4,175 participants who were randomised to the control group shared the video (RR 1.0 [95%CI 0.5 to 1.9], $p=0.998$). Based on the most liberal definition of sharing, we found that 62 (1.5%) participants in the intervention group and 62 (1.5%) participants in the control group shared the videos (1.0 [0.7 to 1.4], $p=0.997$). The effect of the emotional content on sharing did not vary based on an intention-to-treat (ITT) analysis.

Based on the most conservative definition of sharing, 18 (8.1%) out of 221 participants who watched the intervention video shared it and 18 (8.4%) out of 215 participants who were randomised to the control video shared it (RR 0.97 [95%CI 0.5 to 1.8], $p=0.93$). Based on the most liberal definition of sharing, 62 (28.1%) participants in the intervention group shared the videos and 62 (28.8%) participants in the control group (0.97 [0.7 to 1.3], $p=0.86$). The effect of the emotional content on sharing again did not vary based on the per-protocol (PP) analysis. Table 1 summarises the results.

Table 1. Results of sensitivity analyses: video sharing

	<i>Intervention video</i>	<i>Control video</i>	<i>Relative risk (95%CI)</i>	<i>P-value</i>
Shared/allocated (ITT)				
Most conservative	18/4178 (0.4%)	18/4175 (0.4%)	1.0 (0.5 to 1.9)	0.998
Most liberal	62/4178 (1.5%)	62/4175 (1.5%)	1.0 (0.7 to 1.4)	0.997
Shared/watched (PP)				
Most conservative	18/221 (8.1%)	18/215 (8.4%)	0.97 (0.5 to 1.8)	0.93
Most liberal	62/221 (28.1%)	62/215 (28.8%)	0.97 (0.7 to 1.3)	0.86

Secondary outcome

Based on the most conservative definition of sharing, the average number of views generated by the participants in the intervention group was 0.02 (95%CI 0.003 to 0.03) and by those in the control group was 0.01 (0.003 to 0.02). The difference between the two groups was 0.01 (-0.008 to 0.02, p=0.39). Based on the most liberal definition of sharing, the average number of views generated by the participants in the intervention group was 0.06 (0.02 to 0.09) and by those in the control group was 0.04 (0.02 to 0.06). The difference between the two groups was 0.02 (-0.03 to 0.06, p=0.44). The difference in the number of views generated by participants varied from 0.01 to 0.02 based on the ITT analyses.

The average number of views generated as a result of video sharing by those who watched the intervention video was 0.3 (0.06 to 0.5) and by participants who watched the control video was 0.2 (0.06 to 0.3) based on the most conservative definition of sharing. The difference between the two groups was 0.1 (-0.2 to 0.4, $p=0.41$). The average number of views generated by those who watched the intervention video was 1.1 (0.4 to 1.8) and by participants who watched the control video was 0.8 (0.3 to 1.2) based on the most liberal definition of sharing. The difference between the two groups was 0.3 (-0.05 to 1.1, $p=0.47$). The difference in the average number of views generated by each participant ranges from 0.1 to 0.3 based on the PP analyses.

Table 2 summarises the results. Figure 2 and 3 show the distribution of the number of views generated by participants based on the most conservative definition and the most liberal definition respectively. Participants who did not share the videos are not included in the histogram.

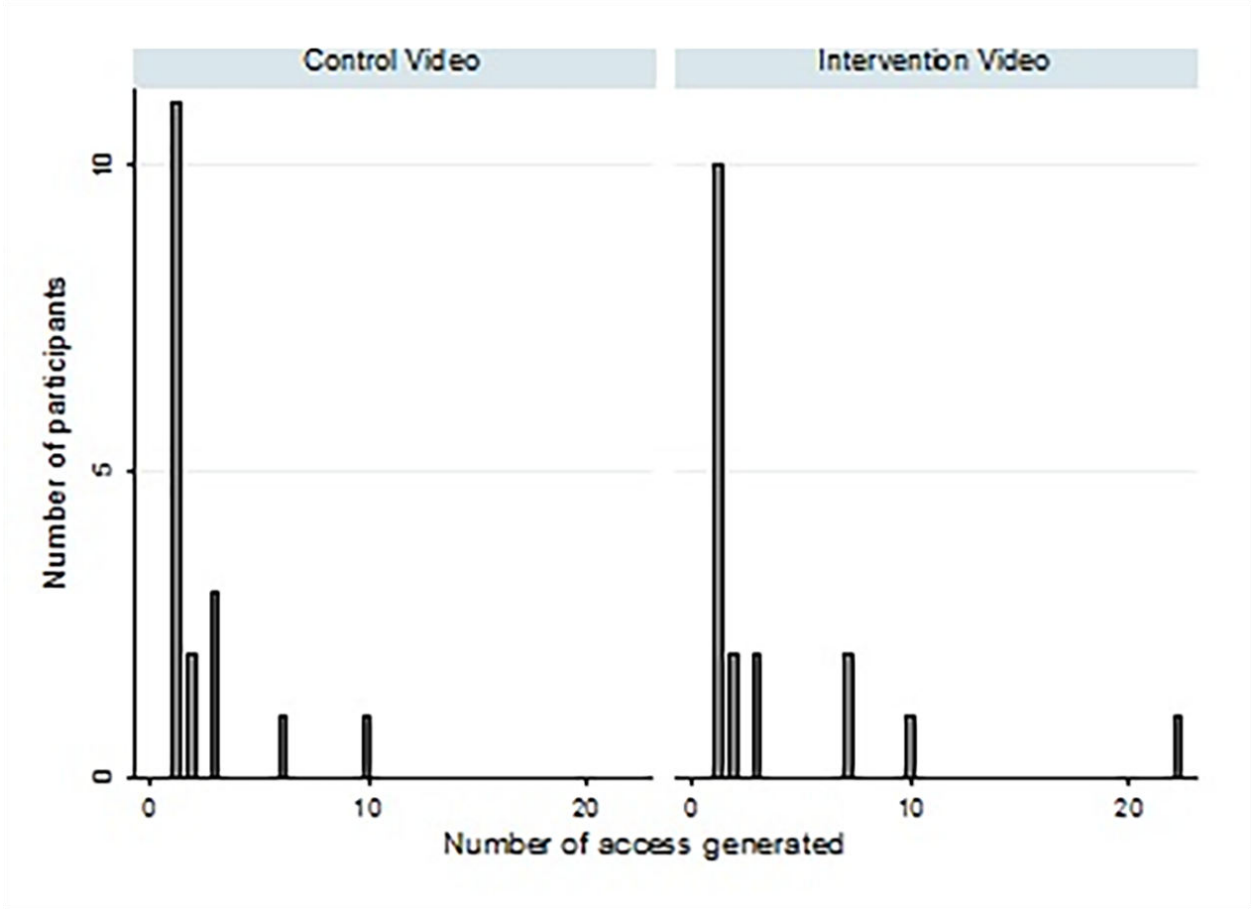


Figure 2 Distribution of the number of views each participant generated (based on the conservative definition of sharing)

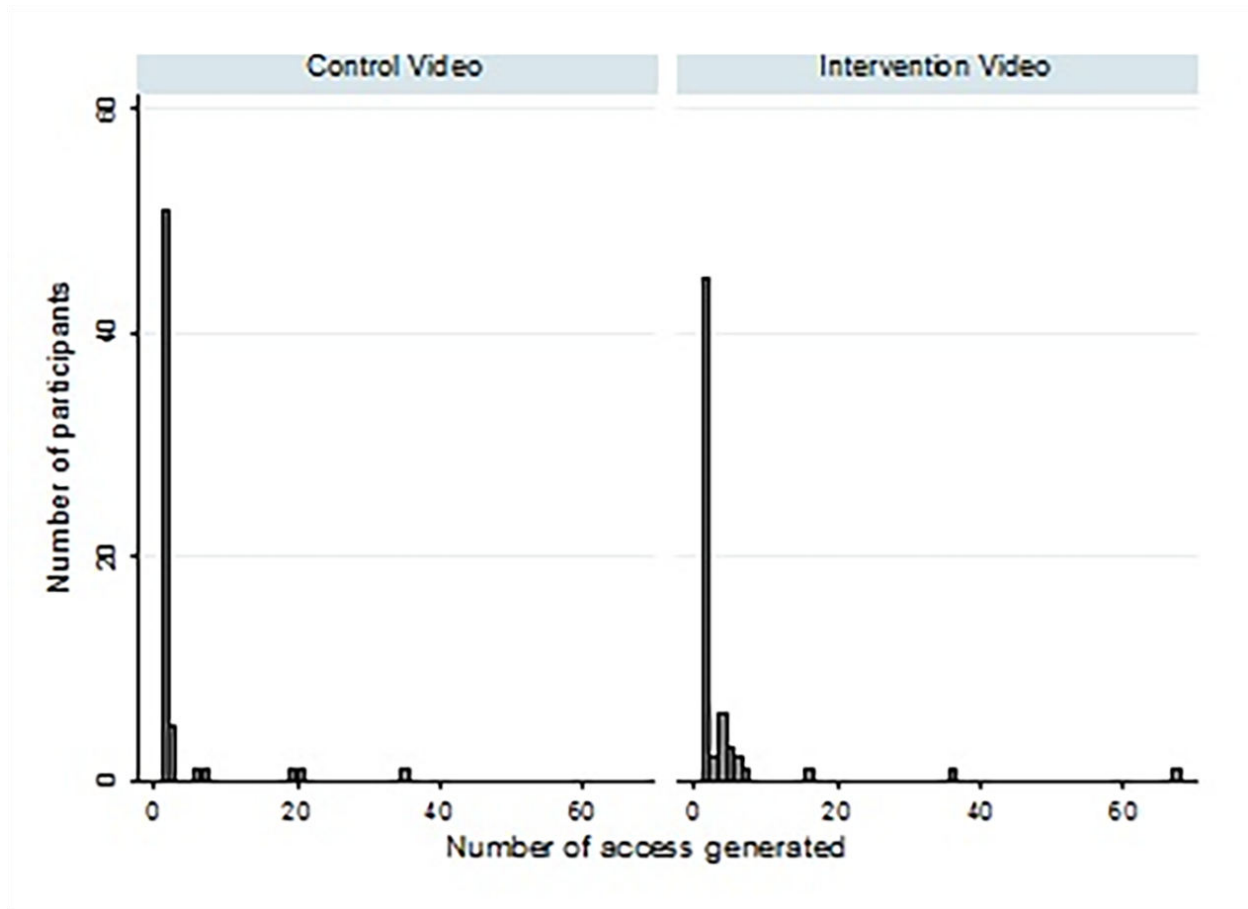


Figure 3 Distribution of the number of views each participant generated (based on the liberal definition of sharing)

Table 2. Results of sensitivity analyses: mean number of views generated

	<i>Intervention video</i>	<i>Control video</i>	<i>Difference</i>	
	<i>(95%CI)</i>	<i>(95%CI)</i>	<i>(95%CI)</i>	<i>P-value</i>
Mean of views (ITT)				
Most conservative	0.02 (0.003 to 0.03)	0.01 (0.003 to 0.02)	0.006 (-0.008 to 0.02)	0.39
Most liberal	0.06 (0.02 to 0.09)	0.04 (0.02 to 0.06)	0.02 (-0.03 to 0.06)	0.44
Mean of views (PP)				
Most conservative	0.3 (0.06 to 0.5)	0.2 (0.06 to 0.3)	0.1 (-0.2 to 0.4)	0.41
Most liberal	1.1 (0.4 to 1.8)	0.8 (0.3 to 1.2)	0.3 (-0.5 to 1.1)	0.47

Conclusion

When we analysed the data obtained based on most conservative and liberal definitions, the number of outcome events became the same in both groups on ITT basis and PP basis. Hence, relative risks were one or very close to one. This sensitivity analysis showed that the number of outcome events varied between most conservative and liberal definitions, but the effect size did not.