

A. Key Findings

- Raw Model Results Interpretation

- **General Model Fit:** The model converges properly, indicating that the estimates are reliable.
 - Used 93 observations from 31 subjects who were present for all three visits and used the applications.
- **Time Effect:** The effect of time on MARS5 was significant at some points, suggesting changes over time irrespective of the group.
- **Group Effect:** The difference between the intervention and control group was not consistently significant, indicating that the intervention might not have had a uniform effect across all time points.
- **Interaction Effect:** The interaction between group and time showed some significant effects, particularly at specific time points, which suggests that the intervention's impact varied over time.

- Model Adjusted for Confounders Results Interpretation

- **Model Fit and Convergence:** Similar to the raw model, the adjusted model shows good fit and convergence, ensuring the reliability of the estimates.
- **Time and Group Effects:** Adjusting for confounders affected the significance of the time and group effects, which might suggest that some of the observed effects in the raw model were due to these confounders.
- **Significant Interaction:** The interaction terms in the adjusted model remained significant at certain time points, reinforcing the idea that the intervention's effects are time-dependent.

B. Detailed Analysis With respect to groups

- Raw Model Interpretation

- Group 0 (Control) Results:

1. **t0**: Baseline mean estimate of MARS5 is 21.4706 with 95% CI [20.1959, 22.7453].
2. **t2**: Mean increases to 22.8235 with 95% CI [21.8153, 23.8317]; **significant improvement** from **t0** with $p=0.0164$.
3. **t3**: Mean slightly decreases to 22.0000 with 95% CI [20.9688, 23.0312]; **no significant change** from **t0** ($p=0.3268$).

- Group 1 (Intervention) Results:

1. **t0**: Baseline mean estimate of MARS5 is 20.7143 with 95% CI [19.0885, 22.3400].
2. **t2**: Mean increases to 21.4286 with 95% CI [19.7519, 23.1052]; **not significantly different** from **t0** ($p=0.4124$).
3. **t3**: Mean increases to 22.5714 with 95% CI [21.3718, 23.7711]; **significant improvement** from **t0** ($p=0.0166$).

- Interaction Effects

- **Significant interaction** effect between Group*temps at t2 ($p=0.0046$), indicating that the intervention group shows a **different** pattern of change compared to the control group at this time point.
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- Model Adjusted for Confounders Interpretation

- Group 0 (Control) Adjusted Results:

- **t0** to **t2**: The difference in means slightly decreases, showing less improvement compared to the raw model, which suggests that some of the initial observed effects were due to confounders.
- **t3**: Similar to the raw model, no significant change from **t0**.

- Group 1 (Intervention) Adjusted Results:

- **t0** to **t2**: No significant change, which aligns with the raw model findings but adjusted for confounders.
- **t3**: **Consistent significant improvement** from **t0**, reinforcing the effectiveness of the intervention at this later stage even after adjusting for confounders.

- Interaction Effects

- **Consistent significant interaction effect** at **t2** ($p=0.0133$ in the adjusted model), suggesting that the timing of the intervention effects is **critical** and varies by group.

C. Conclusion and Recommendations

1. **Effective Timing:** The intervention appears to have **the most significant effect** at **t3** for the **intervention** group, which is consistent across **both** models. This suggests that the intervention might take time to manifest its full effects.
2. **Influence of Confounders:** Adjusting for confounders **does not significantly** alter the key findings, indicating **robustness** in the intervention's effects.
3. **Future Focus:** Further research could explore **additional confounders** and perhaps **extend the timeline of the study** to understand the **evolution** of the intervention's effects.