

Effects of ethyl chloride spray before arteriovenous fistula puncture on pain, depression, and noncompliance of hemodialysis

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PURPOSE

- This study was conducted to examine the effects of ethyl chloride spray during arteriovenous fistula puncture on pain, depression, and noncompliance in hemodialysis patients.

METHODS

- This study used a randomized controlled trial design.
- The participants were adult chronic renal failure patients who received hemodialysis treatment through arteriovenous fistula 3 times a week and were randomly assigned using the macro function of excel program.
- Ethyl chloride spray was applied to 20 subjects in the experimental group during arteriovenous fistula puncture, and a placebo spray was applied to 20 subjects in the control group, and the intervention was conducted 12 times for 4 weeks. A total of 33 participants were used in the final analysis due to 7 dropouts.
- Outcomes were puncture pain, depression, and non-compliance and were measured using the face pain rating scale, Center for Epidemiological Studies Depression Scale (CES-D), and modified United States Renal Data System tools.
- During the pre-examination, puncture pain, depression, and noncompliance were measured. Post-puncture pain was measured 4 times (1st, 5th, 9th, 12th), and post-depression and post-noncompliance were measured after the last intervention.
- Hypothesis testing was carried out using the repeated measures ANCOVA, ANCOVA, and Fisher's exact test.

RESULTS

- As a result of the pre-homogeneity test of between two groups, it was confirmed that the sexes were not homogeneous. Therefore, when testing the hypothesis, sex was treated as a covariate and analyzed.
- Puncture pain was significantly reduced in the experimental group ($F=21.44$, $p<.001$). However there was no significant difference between the groups in depression ($F=1.45$, $p=.236$) and noncompliance ($\chi^2=.06$, $p=1.000$).

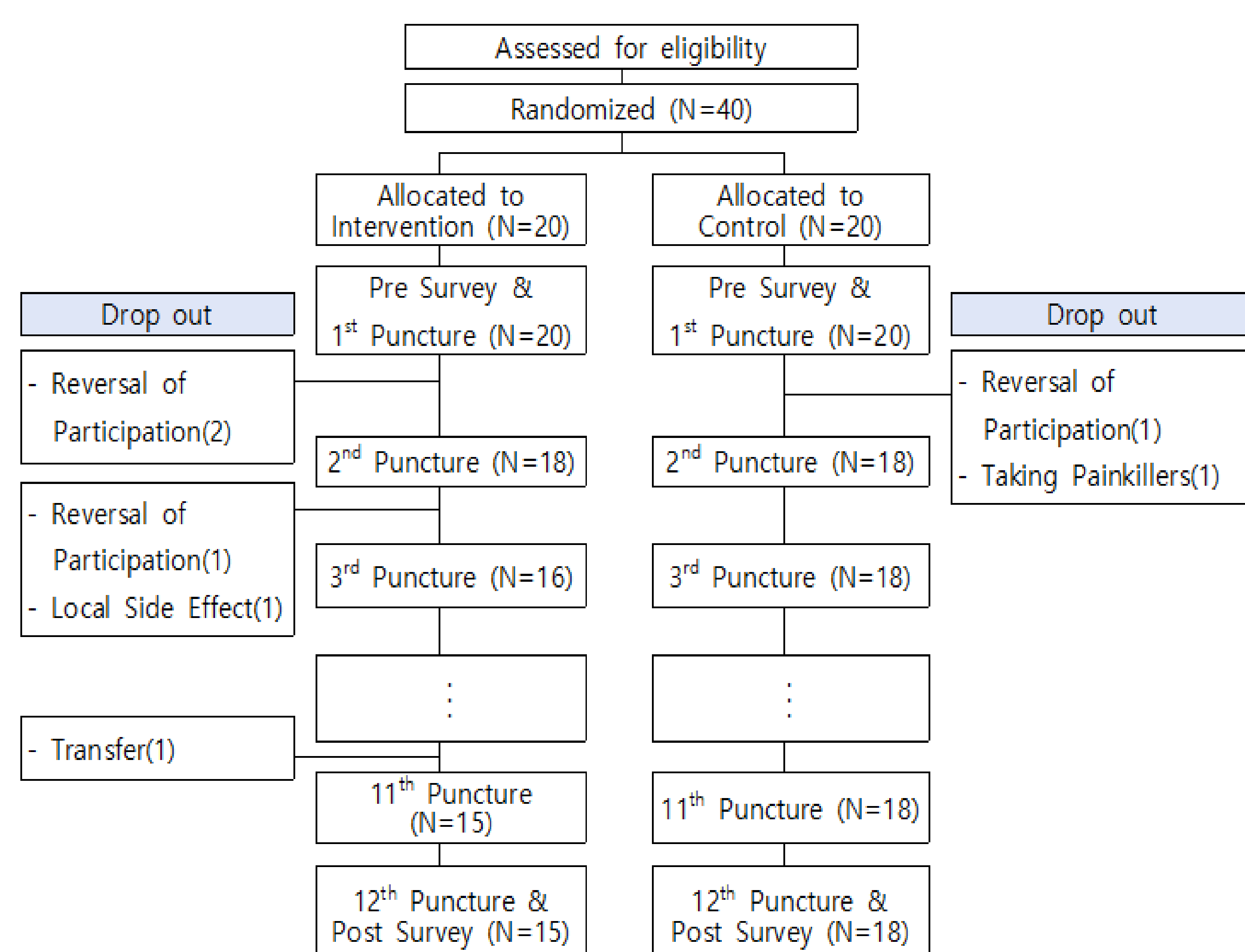
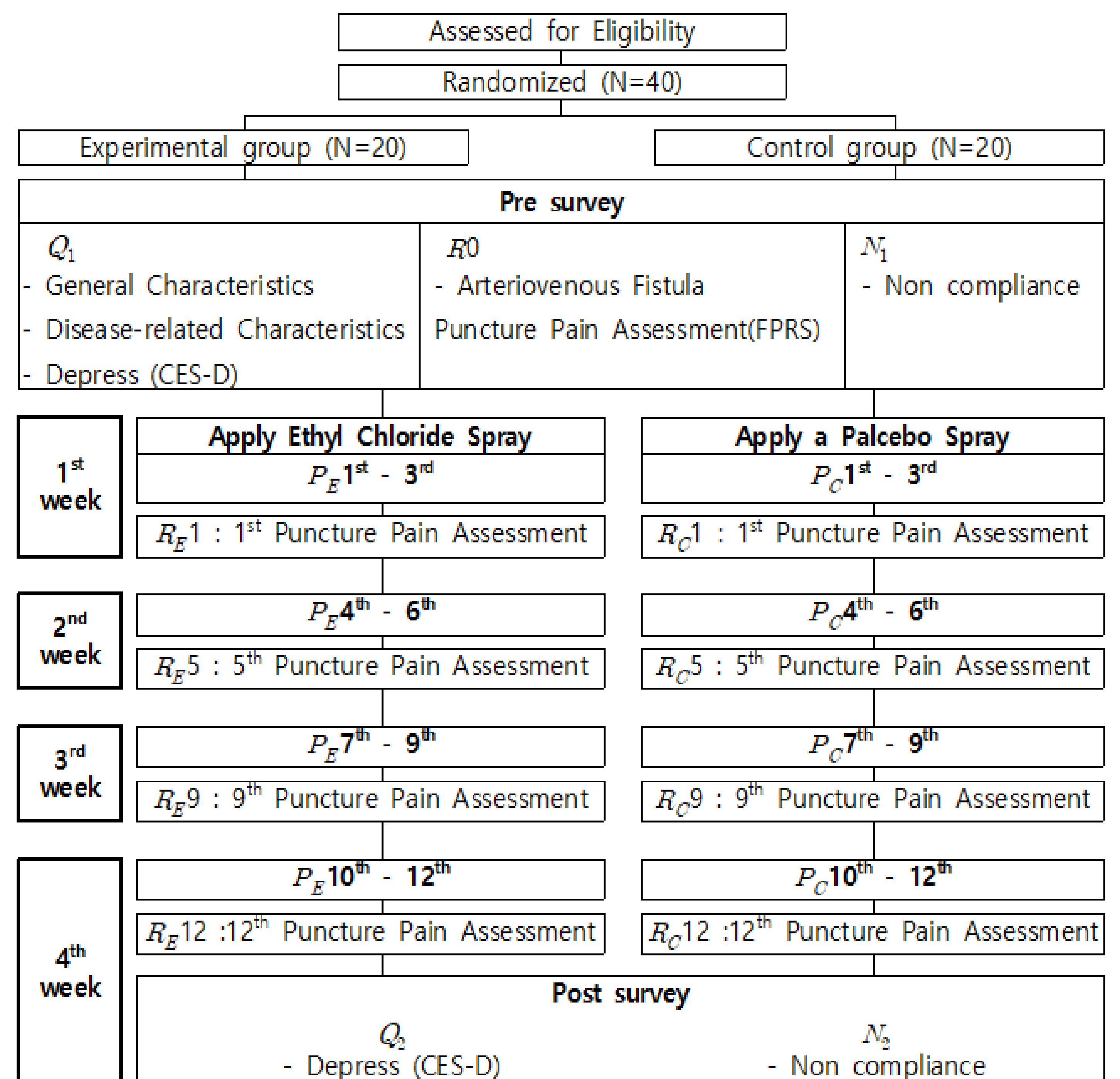


Figure 2. Flowchart of the study process



Q_n : Questionnaire N_n : Non compliance Assessment $_1$: Pre survey $_2$: Post survey
 P : Puncture R : Puncture Pain Assessment E, C : E(Experimental), C(Control)
 FPRS : Wong-Baker Faces Pain Rating Scale.

Figure 1. Research design

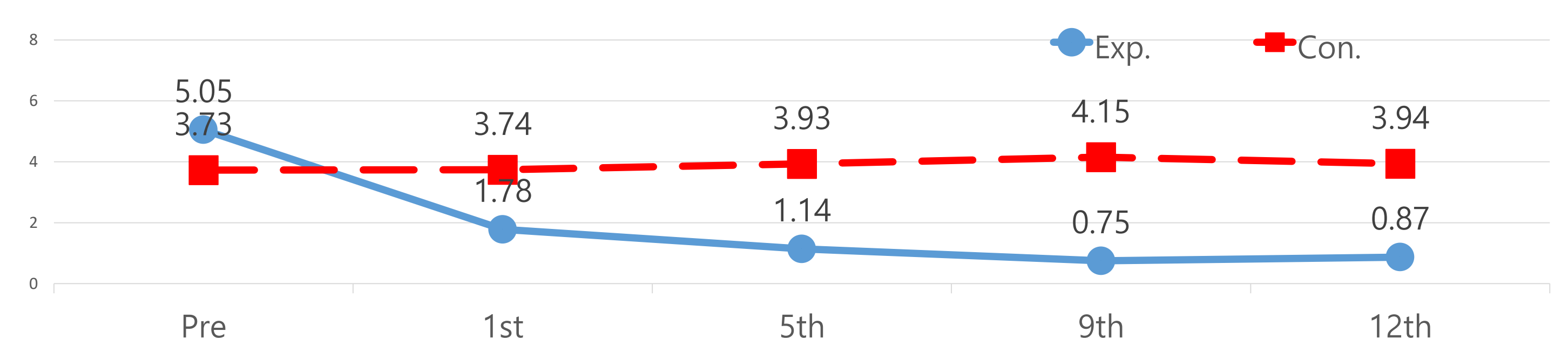


Figure 3. Effects of ethyl chloride spray on puncture pain

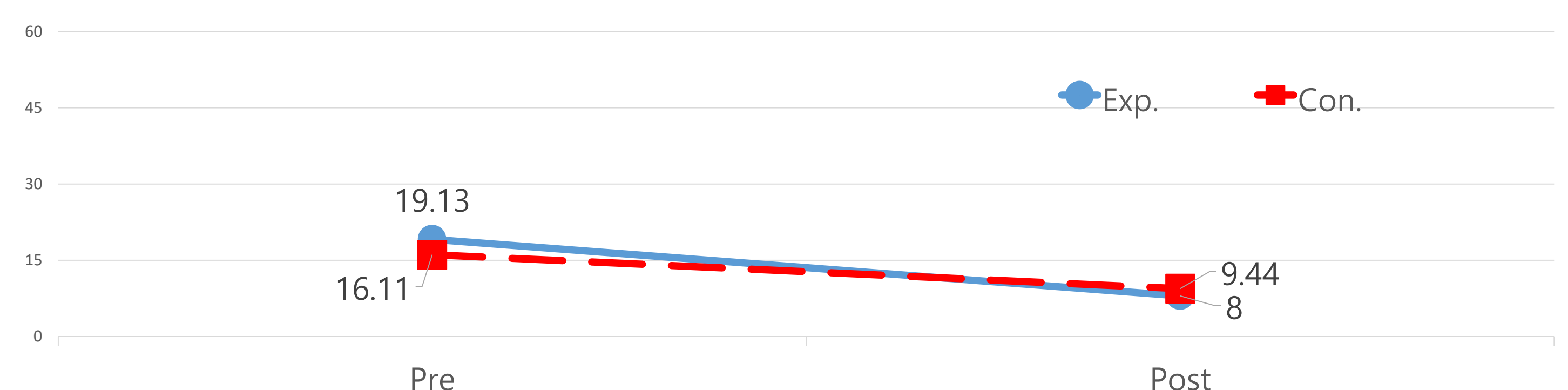


Figure 4. Effects of ethyl chloride spray on depression

	Noncompliance, n(%)		χ^2	p
	Yes	No		
Exp.	3 (20.0)	12 (80.0)	.06†	1.000
Con.	3 (18.2)	15 (81.8)		

CONCLUSIONS

- Ethyl chloride spray applied during arteriovenous fistula puncture in hemodialysis patients had a significant effect on puncture pain.
- Therefore, it is expected that ethyl chloride spray can be applied clinically as a simple pain intervention for both hemodialysis patients and medical staff.

Key words

Hemodialysis, Arteriovenous fistula, Puncture, Pain management