Title Electronic Screening and Brief Intervention For Alcohol Related Facial Trauma: A Randomized Controlled trial

Dr Matthew Woliansky MD, BDS, Mphil (current), GDip ; Members: Kai Lee, BDSc MBBS MMedSci FRACDS (OMS); Oral and Maxillofacial Surgery

INTRODUCTION

Alcohol-related trauma, including maxillofacial trauma (MFT), is a major public health concern in Australia. Alcohol affects judgment compounding the likelihood of trauma by resultant aggression, interpersonal violence, and motor vehicle accidents [1]. Up to 50% of facial trauma presentations are related to alcohol [2] Research has shown that interventions to challenge drinking behaviours are significantly more effective following a traumatic event such as a violent incident [3]. Screening and Brief Interventions (SBIs) are proven effective in reducing recidivism for alcohol-related trauma (e.g., in the setting of Brief Alcohol Intervention) [4]. Despite this, it has not gained promine nce in trauma management The reasons for this can be attributed to many factors, such as time constraints , a lack of training and education. [5]. Technology/ electronic SBI using mobile phones, tablets, apps, and websites could offer a solution, providing streamlined and accessible SBI without reliance on clinician time or training.

This study continuation of the work conducted by Lee et al (2017) which used looked a the effectiveness of SBI in alcohol MFT conducted at TheWestern and Universtiy Hospital Geelong. [6]

OBJECTIVES

- *To understand the feasibility and efficacy of e-SBI as a tool for addressing alcohol misuse among MFT patients,*
- *To inform patient management and policy by providing evidence-based data to inform decisions regarding the management of alcohol-related facial trauma and trauma,*
- *Determine the feasibility of e-SBI implementation in patients with alcohol-related facial trauma.*

METHOD

This study was a two-arm parallel design randomized controlled trial (RCT) with a 1:1 allocation ratio with patients pooled from Royal Perth Hospital, Canberra Hospital, and University Hospital Geelong.

The recruitment of the participants involved the members of the Maxillofacial Units at the participating hospitals, identifying potential participants and introducing them to the study.

Eligible patients were provided information about the study and a QR code to access a specially designed web app that could be opened on a browser or uploaded to their mobiles or tablets.

App design features: (a) accessible on a computer/tablet/smartphone, (b) ability to automatically randomize (simple computer randomization) participants to treatment and control conditions without the input of the treating team, (d) link patients to conduct a survey (RedCap), for data collection on demographics and intervention outcomes.

The primary outcome measured was the ASSIST(Alcohol, Smoking, and Substance Involvement Screening Test) . The secondary outcomes measured included (a) self-awareness, (b) talking about drinking, (c) support network, (d) perceived risk, and (e) setting goals based on the survey created in Lee et al's 2017 study [6]. Besides baseline SBI, the app notified the participants at the 3-month follow-up mark to assess any changes in at-risk alcohol consumption scores and the participants' attitudes towards drinking and alcohol-related injuries. Three additional items were added to the questionnaire to assess the patients' experience using the e-SBI app.

Covariate		Total n (%)	Group Comparison	
			Experimental (n)	Control (n)
Occupation	Agriculture Farming	5 (11.1)	1	4
	Building	11 (24.4)	5	6
	Business	3 (6.7)	0	3
	Education	2 (4.4)	0	2
	Factory workers	1 (2.2)	1	0
	Health	2 (4.4)	1	1
	Hospitality	7 (15.6)	4	3
	Other professional	4 (8.9)	2	2
	Retire	3 (6.7)	0	3
	Student	3 (6.7)	1	2
	Unemployed	4 (8.9)	3	1
Site Location	Canberra	17 (37.8)	6	11
	Perth	20 (44.4)	11	9
	Geelong	8 (17.8)	2	6
Gender	Male	32 (71.1)	15	17
	Female	10 (22.2)	3	7
	Prefer Not To Say	3 (6.7)	1	2
Age Group	Over 60	3 (6.7)	0	3
	18 - 29	18 (40.0)	8	10
	30 - 46	16 (35.6)	5	11
	47 - 60	8 (17.8)	6	2
Fracture Site	Mandible	13 (28.9)	5	8
	Maxilla	3 (6.7)	1	2
	Multiple Sites	1 (2.2)	1	0
	Nasal	3 (6.7)	1	2
	Orbit	16 (35.6)	8	8
	Zygomatic	9 (20.0)	3	6
Etiology	Accident	16 (35.6)	4	12
	Falls	10 (22.2)	5	5
	IPV	19 (42.2)	10	9
ED Presentation	First	31 (68.9)	15	16
	Second	12 (26.7)	2	10
	Over 3 Times	2 (4.4)	2	0

Table 1. Summary of Participant Demographics (*N*=45)

Outcome (Mean Change)	Sample Questionnaire Items (Mean Change)	Control (N=26)		Experimental (N=19)		p-value (Two-tailed)	Cohen's d (95% CI)
		Mean	SD	Mean	SD		
ASSIST Score		-6.96	19.80	-18.94	21.69	.065	-.58 (-.03, 1.18)
Self-awareness		.88	3.90	-1.11	3.59	.084	.53 (-.08, 1.13)
Talking about drinking		-.04	8.06	-2.16	7.90	.384	.27 (-.33, .86)
Support network		.19	3.36	-1.32	4.41	.221	.39 (-.21, .99)
Perceived risk		.58	7.09	-2.21	6.37	.175	.41 (-.19, 1.01)
Setting goals		-.12	4.24	-.42	3.55	.794	.08 (-.52, .67)

Table 2. Descriptive Statistics and Independent Samples t-test Results
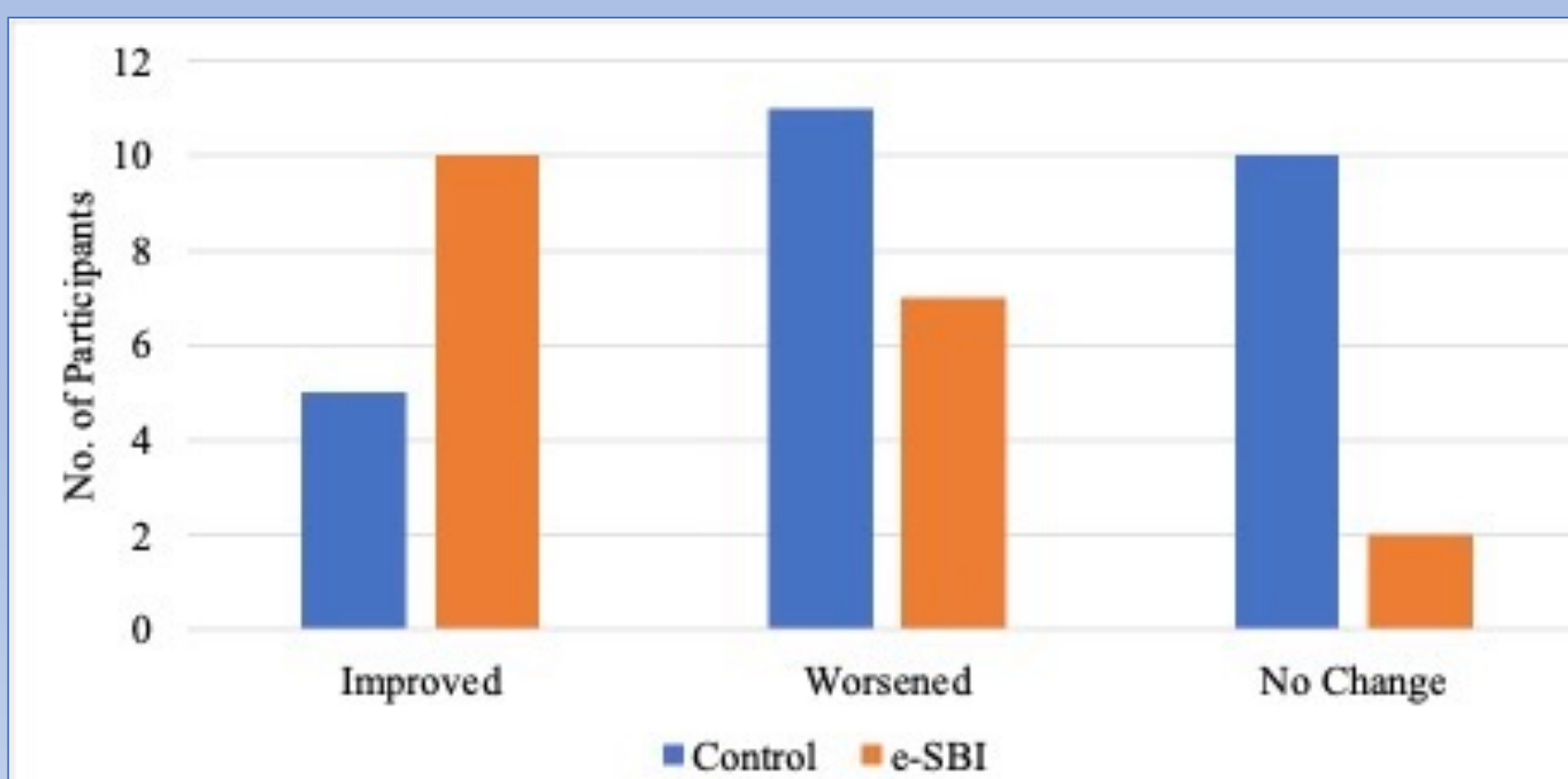

Figure 1: Histogram showing the proportion of participants whose at-risk drinking level (ASSIST scores) improved, worsened, or did not change.

DISCUSSION

We found that e-SBI demonstrated a moderate effect size in reducing at-risk alcohol consumption. Therefore, the findings of this RCT support previous studies that have demonstrated the effectiveness of the various forms of e-SBI in reducing at-risk alcohol consumption. The mean change in ASSIST scores did not reach statistical significance which could be attributed to small sample size. It was also found that although the mean changes in the secondary outcomes did not achieve statistical significance. Still, the e-SBI had moderate effects on self-awareness, talking about drinking alcohol, support networks, and perceived risk. Moderate effect sizes imply that the e-SBI had a notable and meaningful influence on these aspects and is substantial enough to be considered practically significant in changing attitudes and behaviours towards drinking and alcohol-related trauma among trauma patients.

The e-SBI noticeably made the participants in the experimental group more conscious of their alcohol consumption and its consequences and hence recognized better the risks associated with their drinking behaviour.

The fact that the intervention meaningfully encouraged participants to engage in conversations about their alcohol use suggests that the intervention increased their motivation to seek support or even implement behavioural changes.

These findings further those from the pilot study by Lee et al (2017) [6] that also indicated improvements in attitudes towards alcohol drinking and trauma after exposure to the e-SBI [23]. Also, the potential of the e-SBI implemented in this study in reducing at-risk alcohol consumption and changing attitudes towards drinking and facial-related trauma is supported by the fact that exposure to the intervention was associated with significant improvements in the perception of the usefulness of the information provided, knowledge about the nature and management of facial trauma, and knowledge about where to seek support whenever they develop concerns about their drinking. These findings support the usefulness of e-SBI in post-trauma management of patients with alcohol-related facial trauma in acute settings.

CONCLUSION

Although mean changes in at-risk alcohol consumption and attitudes towards alcohol use and trauma were statistically non-significant, the effect sizes ranged between moderate to large when experimental and control groups were compared.

Participants in the experimental group reported the app provided them with useful information, helped them have a better understanding of the nature and management of alcohol-related facial trauma, and helped them know where to seek help whenever they became concerned with their level of alcohol consumption. Future research can expand on the current study with further multicenter RCTs with larger sample sizes and modulated/tailored e-SBI content.

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