

Feasibility, Acceptability and Preliminary effectiveness of a Digital Intervention Targeting Expectant Fathers to Promote Secondhand Smoke Exposure Reduction during Pregnancy: a Pilot Randomized Controlled Trial

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Background

- Pregnant women are primarily exposed to secondhand smoke (SHS) in private environments such as the home, mainly due to their male partner’s smoking.
- Previous interventions have typically targeted pregnant women, despite many women feeling uncomfortable confronting their partners.

Aim: To assess the feasibility, acceptability and preliminary effectiveness of *First Breath* - a digital behavioral intervention (WebApp) to directly support expectant fathers to reduce SHS exposure during pregnancy.

Methods

- Pilot randomized controlled trial (RCT).
- Inclusion criteria: Male, Hebrew-speaking, age ≥18, smoking at least one combustible cigarette per day, and living with a pregnant partner (<25 weeks gestation).
- Exclusion criteria: Engagement in a smoking cessation program, high-risk pregnancy, having a pregnant partner who currently smokes, or lack of internet access.
- Primary outcome was recruitment.
- Other feasibility and acceptability outcomes include survey completion rate, WebApp components completion and re- enter rates, and satisfaction.
- Participants were recruited via social media and randomized to receive either the First Breath WebApp and reminders (intervention) or general information about SHS in pregnancy (control).
- At baseline and 3-months, participants completed questionnaires.
- Descriptive analysis was conducted for the feasibility and acceptability outcomes.
- A mixed-effects, repeated measures, model was used to examine within- and between-group changes over time for the effectiveness outcomes.

Results

- Of 120 screened, 45 (37.5%) were eligible and enrolled; 42 (93%) completed follow-up (Figure 1). Participant characteristics are presented in Table 1.
- Mean WebApp engagement time was 13 min (10 sec–42 min), compared with 1 min (10 sec–3 min) in the control group. Five (22%) participants completed all intervention components and 14 (61%) re-entered the WebApp at least once. More than 80% from both groups expressed overall high satisfaction.

Figure 1: Flow Chart of the study participants

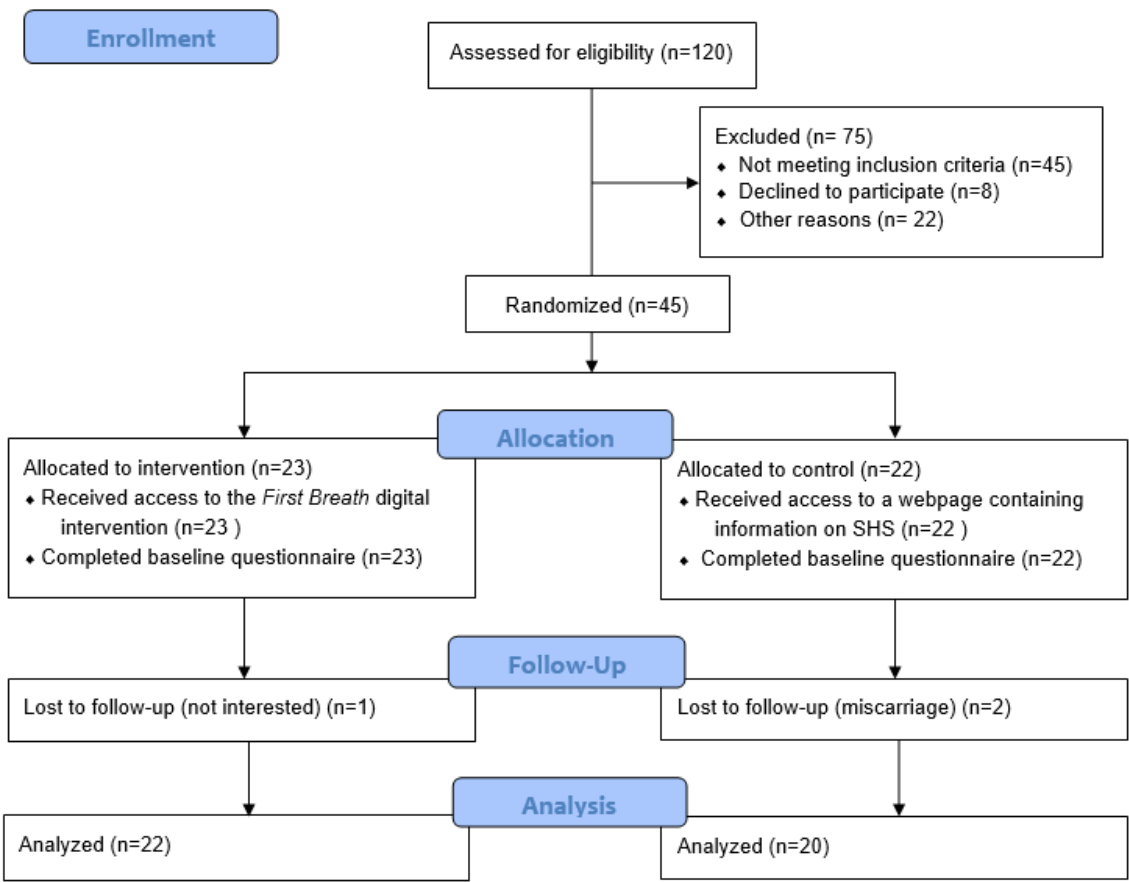


Table 1: Participant Characteristics at Baseline (n=45)

Variable	Intervention (n=23)	Control (n=22)
Age (mean [SD])	31.6 [5.31]	32.0 [4.71]
Smoking is allowed indoors	4 (17.4%)	4 (19.0%)
Number of cigarettes (mean [SD])	10.4 [6.3]	14.0 [11.8]
Nicotine Replacement Therapy use at home	2 (8.7%)	3 (13.6%)

- Percentage of participants reporting smoking only outdoors increased from 82.6% at baseline to 90.5% at follow-up in the intervention group, and from 81% to 85% in the control group (p=0.72) (Figure 2).
- Perceived SHS exposure decreased in the intervention group and increased in the control group, with a significant group-by-time interaction (p=0.026) (Figure 3).
- Positive changes were observed for both groups regarding smoking habits, knowledge and attitudes, with no significant interaction between time and group.

Figure 2: : changes in smoke-free home rules

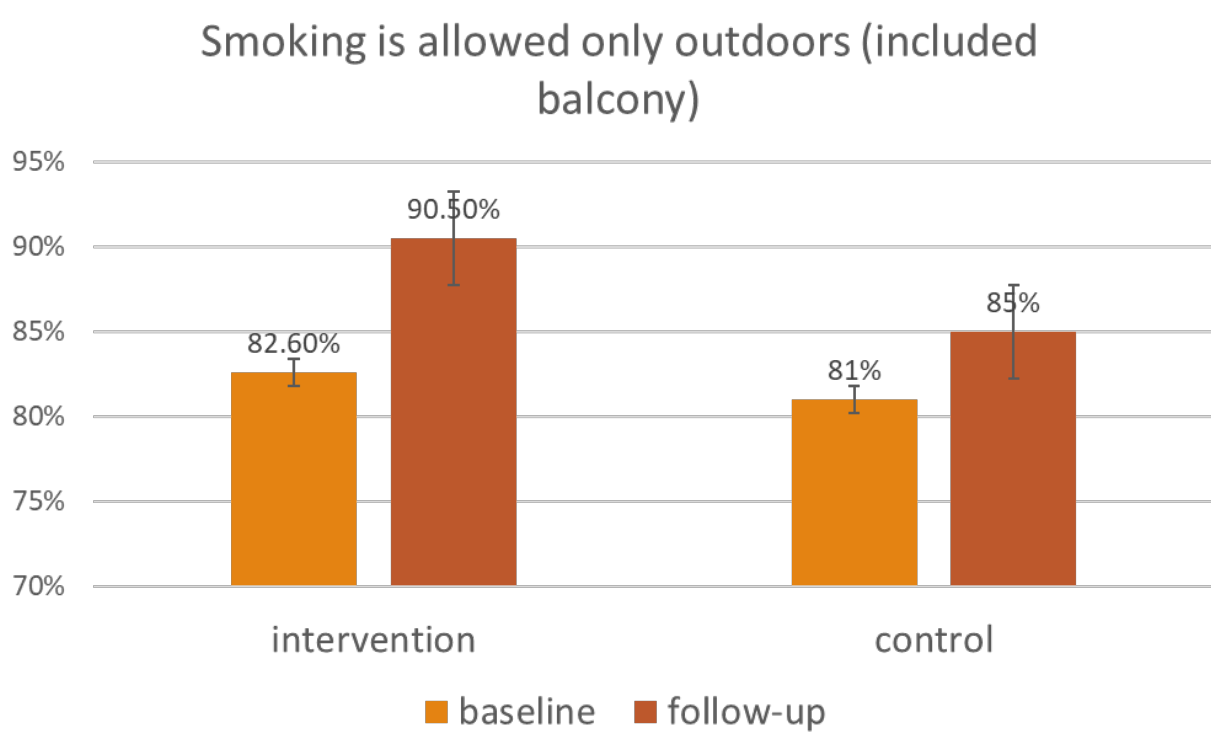
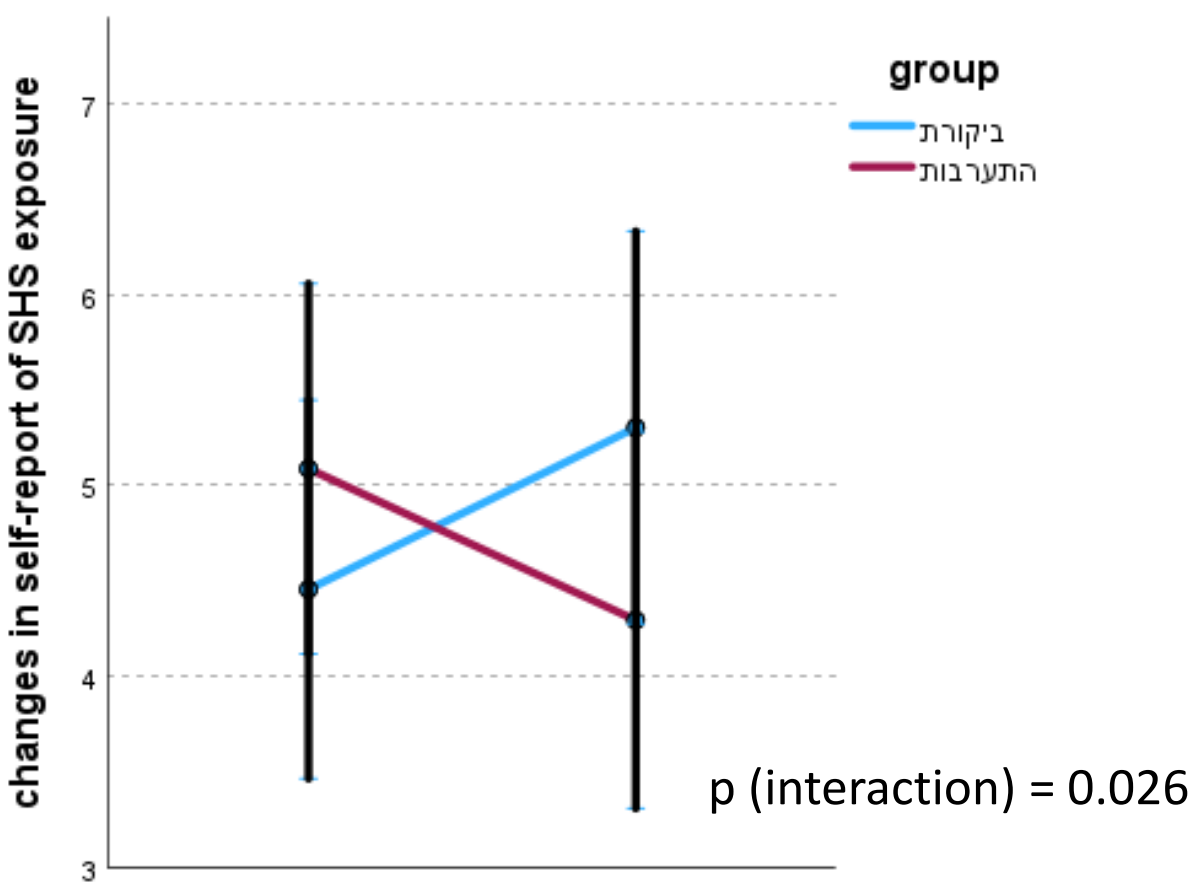


Figure 3: changes in perceived SHS exposure



Conclusions

- First Breath was moderately feasible and well-accepted among expectant fathers who smoke.
- Results were encouraging regarding effectiveness in reducing perception of SHS exposure and promoting implementation of a smoke-free home.
- Findings will inform the design of a future large-scale RCT that will evaluate effectiveness.