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The impact of a brief cessation induction intervention for waterpipe tobacco smoking: A pilot randomized clinical trial

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HIGHLIGHTS

- The intervention was effective in increasing risk perceptions and WP knowledge.
- Importance of and commitment to quitting WP smoking increased after intervention.
- The research supports the use of personalized feedback to intervene on WP smoking.

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ABSTRACT

Background: Waterpipe (WP) tobacco smoking delivers many of the same harmful toxicants as cigarette smoking and is on the rise in the US. This study evaluated the feasibility and efficacy of a brief personalized feedback intervention in affecting changes in WP smoking among current WP smokers.

Methods: Participants (N = 109) were recruited as they entered WP lounges and completed a questionnaire and exhaled carbon monoxide (eCO) testing before entering the WP lounge. Participants were cluster-randomized to assessment-only control (AOC) or intervention conditions. The intervention condition received health risk information and personalized feedback on pre- and post-WP session eCO levels. Participants completed a survey at the end of the WP session and at 3-month follow-up.

Results: Compared to control, the intervention was effective in increasing knowledge of WP-related harms, correcting risk perceptions, increasing importance of quitting WP smoking, and increasing confidence in ability to quit WP smoking at post-WP session ($p < 0.05$). Differences were maintained for knowledge of WP-related harms, risk perceptions, and commitment to quitting WP at 3-month follow-up; however, no significant difference ($p > 0.05$) was observed in WP smoking (i.e., days smoked and number of WPs smoked) at 3-month follow-up between the intervention ($M = 3.97$ days, $SD = 9.83$; $M = 6.45$ bowls, $SD = 19.60$) and control conditions ($M = 3.32$ days, $SD = 5.24$; $M = 3.49$ bowls, $SD = 5.10$).

Conclusions: The current research supports the use of personalized feedback as a useful intervention method to increase commitment to quit WP, but suggests more intensive interventions may be necessary to achieve WP cessation.

1. Introduction

Cigarette smoking rates have decreased by approximately 33%, while waterpipe (WP) tobacco smoking (also known as shisha, narghile, goza, and hookah) has taken an opposite course, with a 123% increase among U.S. young adults from 2000 to 2011 (Arrazola et al., 2015; Johnston L. D., 2014). This increase in WP use is concerning because WP is one of the most frequently tried tobacco products among young

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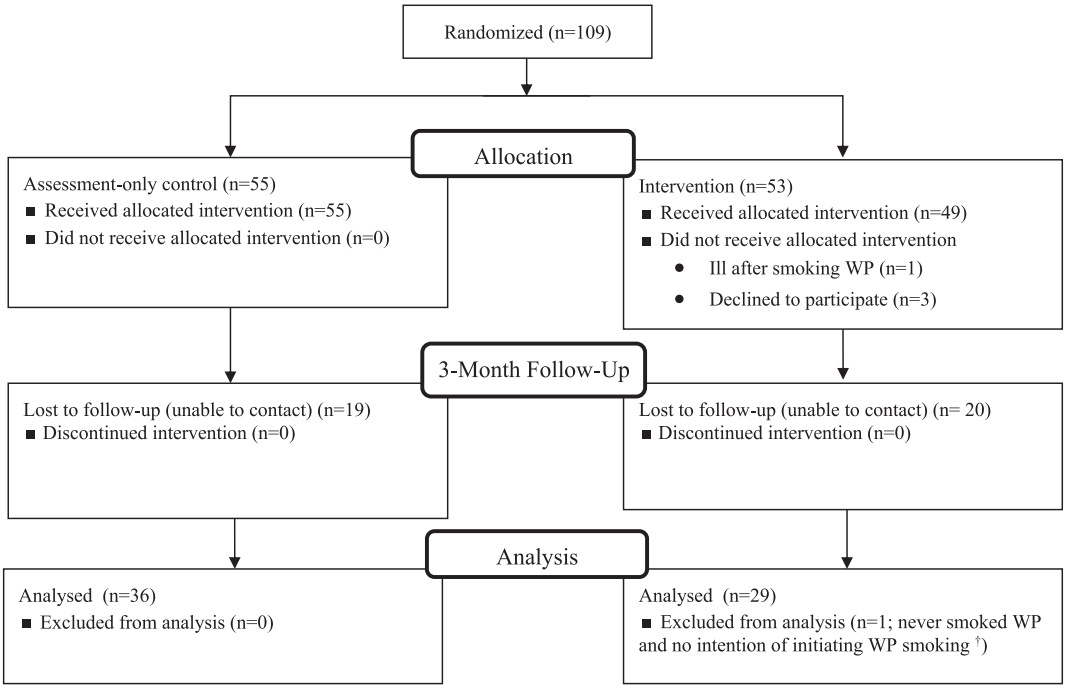

Fig. 1. Participant flow.
Note. WP = waterpipe. †One participant reported never smoking WP with no intention to begin smoking and was therefore removed from analyses.

adults (Berg et al., 2015; Gilreath et al., 2016) and WP smokers are exposed to much higher levels of the same toxicants present in combustible cigarette smoke (Cobb, Ward, Maziak, Shihadeh, & Eissenberg, 2010; Maziak et al., 2009; Shihadeh & Saleh, 2005). As a result, WP smoking is associated with many of the same negative health outcomes as combustible cigarette use, including cancer, lung disease, respiratory illness, and cardiovascular disease (Akl et al., 2010; Cobb et al., 2010). Moreover, because most WP tobacco contains significant levels of nicotine, WP smoking may be as likely to result in tobacco dependence as use of other nicotine-containing products (Aboaziza & Eissenberg, 2015; Cobb, Shihadeh, Weaver, & Eissenberg, 2011; Eissenberg & Shihadeh, 2009; Neergaard, Singh, Job, & Montgomery, 2007).

Despite the growing rates of WP smoking and its potential negative impact on health, only four studies have examined individual-level treatments for WP cessation. The first of these examined the efficacy of a traditional smoking cessation intervention in reducing WP rates among adults in Pakistan (Dogar et al., 2014). WP-only users demonstrated poorer long-term abstinence rates than those who used cigarettes, suggesting that WP-specific interventions may be needed. Three subsequent studies have examined the efficacy of interventions designed specifically to target WP smoking. Lipkus, Eissenberg, Schwartz-Bloom, Prokhorov, and Levy (2011) found that providing education on the harms associated with WP smoking resulted in greater but non-significant WP quit-rates among college students at 6-month follow-up. Similarly, Asfar, Al Ali, Rastam, Maziak, and Ward (2014) documented promising 3-month abstinence rates (30 and 44%) in response to both brief (1 in-person, 3 phones sessions) and intensive (3 in-person, 5 phone sessions) WP interventions, respectively. Finally, in an uncontrolled online study, Essa-Hadad, Linn, and Rafaeli (2015) found that participants decreased WP smoking from baseline to one-month follow-up in response to video- and text-based health information. Collectively, these data show promise for WP-specific interventions.

While these data provide preliminary evidence for the efficacy of interventions for WP smoking, no study has investigated a face-to-face WP cessation intervention in the U.S. U.S. WP smokers are typically non-daily, intermittent users of WP who do not consider themselves "smokers." As a result, U.S. WP users are often unaware of the health harms associated with WP (Heinz et al., 2013; Kingsbury, Parks, Amato, & Boyle, 2016). Interventions that correct misperceptions among WP smokers, such as those utilized in personalized feedback interventions, may be ideal. Personalized feedback interventions contrast individuals' perceived personal health risk and normative standards with discrepant and accurate information in order to motivate behavior change (Miller et al., 2013). For WP users, personalized feedback interventions could provide users with accurate information, target users' risk perceptions, and facilitate behavior change. Personalized feedback is effective in increasing rates of cigarette smoking cessation, decreasing rates of cigarette smoking initiation (de Josselin de Jong, Candel, Segaar, Cremers, & de Vries, 2014), and preventing relapse among daily smokers (Elfeddali, Bolman, Candel, Wiers, & de Vries, 2012).

The current study evaluated the feasibility and efficacy of a brief, one-session, personalized feedback intervention in (a) increasing knowledge of WP-related harms, (b) increasing motivation to quit WP smoking, and (c) decreasing WP smoking among WP lounge patrons. It was hypothesized that, compared to the assessment-only control (AOC) condition, the intervention condition would (1) display greater understanding of the harms of WP smoking at post-session and 3-month follow-up, (2) be more motivated and confident in their ability to change their WP smoking behaviors at post-session and 3-month follow-up, and (3) smoke WP less frequently at 3-month follow-up.

2. Method

2.1. Participants

Using a convenience sample approach, participants were recruited as they entered one of three WP lounges in urban and suburban areas in the Midwest US between August and December 2014. Participants were eligible to participate if they were ≥ 18 years old. Permission to recruit was obtained from the owner at all lounges. See Fig. 1 for a flow diagram of participant randomization and retention.