

# The influence of theatre for social change performance on knowledge, retention, and smoking intention: a theory of planned behaviour approach in adolescents (12–15 years old) — case study of a state junior high school in Makassar

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**Abstract.** Adolescent smoking in Indonesia, including Makassar City (ages 12–15), contributes to the projected rise of adult smokers. Theatre for Social Change (TFSC) is an art-based health promotion method addressing smoking behaviour using the Theory of Planned Behavior (TPB). This quantitative, quasi-experimental study applied a pretest–post test design without control, involving 200 respondents before intervention and 186 after, with short-term retention measured later. Data were collected via questionnaires, focus group discussions, and observations, and analysed using chi-square, paired t-test, and logistic regression. Results showed a significant increase in knowledge immediately after intervention ( $p < 0.005$ ), but no difference between short-term post-tests ( $p = 0.966$ ). Significant effects ( $p < 0.005$ ) were found in TPB variables: Attitude, Perceived Behavioural Control, Subjective Norm, Behavioural Belief, Normative Belief, Control Belief, and Intention. TFSC effectively delivers anti-smoking messages, sustaining knowledge for up to seven days.

## 1 Introduction

Indonesia is one of six countries that has not yet ratified the World Health Organization Framework Convention on Tobacco Control (WHO FCTC). The prevalence of smoking continues to rise, particularly among children and adolescents. According to the Global Adult Tobacco Survey [1], the number of adult smokers increased from 60.3 million in 2011 to 69.1 million in 2021. Among adolescents aged 12–15 years, 2% are smokers with an average consumption of 10 cigarettes per day, while the youngest reported initiation age was found in Papua (5–9 years, 3.2%). In South Sulawesi, the prevalence of smoking among adolescents aged 12–15 years (10%) is higher than the national rate (9.6%).

Smoking has major health consequences, including cancer, cardiovascular diseases, and respiratory illnesses, while also imposing a significant financial burden on the healthcare

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system, estimated at IDR 27.7 trillion per year [2]. Control efforts, such as raising tobacco taxes, have proven insufficient in reducing smoking behavior. Therefore, prevention should be prioritized among adolescents, who are at high risk of initiating smoking [3].

One promotive and preventive approach is through the use of art. Educational theater has been shown to be effective in conveying health messages due to its interactive nature and audience engagement [4]. In various countries, such as Hong Kong and the United States, educational theater programs have been utilized for health campaigns, including smoking prevention.

In Makassar, a Theater for Social Change intervention was conducted by Hasanuddin CONTACT in 2018; however, no specific research has evaluated its effectiveness on adolescents' smoking intentions. This study adapts that intervention using the Theory of Planned Behavior (TPB) framework to measure both smoking intention and knowledge retention among adolescents aged 12–15 after watching the performance. TPB was chosen as it provides a comprehensive explanation of health behavior change [5].

## 2 Methods

This study employed a qualitative quasi-experimental design with a one-group pre-test and post-test without control to evaluate the effectiveness of a Theater for Social Change intervention in preventing smoking behavior among adolescents. The research was conducted at a state junior high school in Makassar over five weeks, with a 45-minute theater performance delivered on December 21, 2022.

The study participants consisted of two groups: theater performers (students from the extracurricular Red Cross club who received training and additional discussions) and theater audiences (7th and 8th-grade students aged 12–15). Inclusion criteria included students who agreed to participate with parental consent, while exclusion criteria involved students who were absent or failed to complete the questionnaire. Sampling was conducted using a quota sampling technique, with a total of 100 respondents per group (plus 10% to anticipate missing data).

The independent variable was the Theater for Social Change intervention, while the dependent variables included knowledge, knowledge retention, and smoking intention. Controlled variables were age, grade, and gender, whereas the uncontrolled variable was students' actual smoking behavior. Data were collected using a knowledge questionnaire (17 items, 8 valid items, reliability  $\alpha=0.851$ ) and a smoking intention questionnaire based on the Theory of Planned Behavior (measuring attitude, subjective norm, perceived behavioral control, beliefs, and intention, all domains showing reliability  $\alpha>0.6$ ).

Data collection involved a pre-test before the performance, post-test 1 immediately after the performance, and post-test 2 seven days later to assess retention. Data analysis included validity and reliability testing, normality testing, univariate analysis, bivariate analysis (Chi-Square, paired t-test or Wilcoxon), and multivariate analysis using logistic regression.

## 3 Result and Discussion

### 3.1 Participant Characteristics

A total of 200 students participated at baseline (pre-test), consisting of 9 theater performers and 191 audience members. At post-test 1 and post-test 2 (seven-day retention), 186 respondents remained eligible after data cleaning. The median age was 13 years (range: 12–15), with the majority aged 12–14. Female students represented a higher

proportion (69.5%) compared to males (30.5%). Most respondents were non-smokers (84%), although 16% reported current or past smoking experience. Regarding parental smoking status, 42.5% reported having at least one parent who smoked. The Relationship Between Workload and Nurse Performance in the Emergency Department of Prof. Dr. H. Aloei Saboe Regional General Hospital.

### **3.2 Knowledge and Retention**

Comparison of pre-test and post-test 1 demonstrated a significant improvement in knowledge scores ( $p=0.04$ ). Knowledge retention after seven days (post-test 2) showed no significant decline compared with post-test 1 ( $p=0.096$ ), but remained significantly higher compared to baseline ( $p<0.001$ ). Items with the greatest improvement included recognition of smoking as harmful and religiously prohibited, awareness of the economic impact of tobacco, and understanding of harmful substances in cigarettes.

### **3.3 Theater Evaluation**

The majority of students (98.4%) reported enjoying the theater performance. Most respondents (88.7%) stated they gained substantial information on smoking behavior. Importantly, 60.8% strongly agreed and 35.5% agreed that the theater performance reduced their intention to smoke.

### **3.4 Focus Group Insights**

FGD with teachers and theater players suggested that performances should not exceed 45 minutes, use relatable and informal language, and integrate religious and cultural perspectives to enhance relevance. Students expressed enthusiasm, noting the performance was more engaging than traditional lectures, and some reported a change in perception toward smoking.

### **3.5 Theory of Planned Behavior Constructs**

Logistic regression analysis revealed several TPB constructs significantly associated with smoking status and intention:

3.5.1 Attitudes: Students who could refuse peers' smoking offers were 1.8 times more likely to remain non-smokers (OR=0.56, p=0.002).

3.5.2 Perceived Behavioral Control: Those frequently associating with smoking peers were less likely to smoke after the intervention (OR=0.18, p=0.001).

3.5.3 Subjective Norms: Having a father or male sibling who smoked increased the likelihood of being a smoker (OR=2.66, p=0.008).

3.5.4 Behavioral Beliefs: Believing smoking harms health (OR=0.73, p=0.001) and reduces pocket money (OR=2.26, p=0.004) were protective against smoking.

3.5.5 Normative Beliefs: Parental (OR=2.31, p=0.007) and teacher perceptions (OR=2.95, p=0.009) that a student smoked increased the odds of smoking.

3.5.6 Control Beliefs: Students who often disobeyed school rules were more likely to smoke (OR=1.71, p=0.028).

3.5.7 Intentions: Intention to smoke in the future was significantly reduced after the theater intervention (OR=0.30, p<0.001). Agreement that the theater discouraged smoking corresponded with a 5.5 times higher likelihood of not becoming a smoker (OR=0.18, p=0.001).

This study demonstrates that Theater for Social Change can serve as an effective medium for health promotion among adolescents. The intervention generated strong enthusiasm, with more than half of participants expressing high interest in receiving health information through theater [6]. The peer-led nature of the performance may explain this engagement [7], consistent with previous evidence showing that peer theater interventions enhance knowledge [8] and attitudes in nutrition education [9]. As Boal's pedagogical perspective emphasizes, theater empowers participants through collective learning [10], a principle also observed in our focus group discussions with teachers, who noted the novelty and relevance of this approach for school-based health promotion [11].

Our findings confirm a significant improvement in knowledge immediately after the intervention, followed by stable short-term retention after seven days. This pattern aligns with prior research showing the effectiveness of theater in increasing health-related knowledge [12] and with studies indicating that short-term retention of health knowledge tends to remain stable in the first week but may decline over longer periods [2]. The high proportion of participants (88.7%) reporting that they gained substantial information further supports the relevance of theater-based interventions [13]. Similar outcomes have been reported in Uganda, where arts-based interventions improved mental health knowledge and reduced stigma [14].

From a behavioral perspective, the integration of constructs from the Theory of Planned Behavior (TPB) provides additional insight. Parental and sibling smoking were associated with higher smoking risk, echoing earlier evidence that parental smoking influences adolescent initiation through availability, modeling, and normative acceptance. Peer influence also emerged as a critical factor, consistent with research in Jordan and elsewhere demonstrating that peer pressure is a strong predictor of adolescent smoking. Conversely, most adolescents in this study reported being able to resist peer offers to smoke, suggesting

that refusal self-efficacy is a protective factor, as highlighted in meta-analyses of smoking behavior determinants.

Importantly, nearly all participants (96%) agreed that theater is a useful method for smoking prevention among adolescents. This reinforces the potential of arts-based interventions to address literacy barriers and foster culturally relevant health communication. The use of TPB as a guiding framework proved valuable in capturing changes across attitudes, perceived control, subjective norms, and intentions. This study has several strengths, including the use of a novel peer-led theater intervention and the integration of a behavioral theory framework. However, it also has limitations. Knowledge retention was measured only up to seven days, limiting conclusions about long-term effects. Moreover, smoking behavior was self-reported and may be subject to social desirability bias.

Future research should evaluate the long-term impact of theater-based interventions on smoking behavior and explore adaptations across different cultural and school settings. Integrating theater with broader tobacco control strategies, such as taxation and policy enforcement, may provide a more comprehensive approach to reducing adolescent smoking

## 4 Conclusion

This study confirms that the expectations outlined in the introduction—namely, that Theater for Social Change could serve as an effective strategy for smoking prevention among adolescents—were supported by the results. The intervention not only increased knowledge and short-term retention but also strengthened refusal self-efficacy and generated strong acceptance among participants, demonstrating compatibility between the study's objectives and its findings. These outcomes highlight the value of theater as a participatory and culturally relevant medium for health promotion in schools. Looking forward, the results provide prospects for further development, particularly in assessing long-term impacts on smoking behavior, integrating theater-based interventions with broader tobacco control policies, and adapting this approach for other adolescent health issues. Future studies could also expand the application of the Theory of Planned Behavior framework to refine intervention strategies and strengthen behavioral outcomes.

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