

Acceptability and Feasibility of a CBT-Based Mobile Application for Smoking Cessation: Evidence from a Single-Group Cohort Study in China

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Abstract

Emerging evidence suggests that smartphone applications could support smokers in quitting. This study employed a single-group cohort design to assess both the practicality and user acceptance of a novel mobile app developed for smoking cessation in China, while also examining its effect on smoking quit rates. This study recruited 180 smokers from two mainland Chinese cities who were willing to attempt quitting. Participants engaged with a cognitive behavioral therapy (CBT)-based smoking cessation app over a 37- to 44-day period, which included a 7- to 14-day preparatory phase before quitting and a 33-day post-quit intervention. Measures of program feasibility, user acceptability, and smoking outcomes were collected at three stages: at the time of app installation, during the pre-quit phase, and at multiple points after quitting (days 7, 15, and 33). Out of 180 participants, 163 (90.6%) completed the study. Daily engagement with the app was high, with 76–89% of participants logging in at least once per day throughout the baseline, pre-quit, and post-quit stages (days 7, 15, and 33). Overall satisfaction remained strong, reaching approximately 90% at each stage and showing a significant increase from 93% at baseline to 98% at day 33 post-quit ($p = 0.021$). Confidence in the app's ability to support smoking cessation also rose substantially, from 69% initially to 97% at day 33 ($p < 0.001$). Participants expressed high satisfaction (80–90%) with most features, particularly the informational content. Intention-to-treat analyses indicated that 63.9% maintained continuous abstinence for 33 days, while 7-day point prevalence abstinence rates were 81.7%, 87.2%, and 77.8% on days 7, 15, and 33, respectively. The findings indicate that the smartphone-based intervention for smoking cessation is both feasible and well-accepted, offering a novel digital treatment approach that could help overcome the limitations of traditional in-person cessation programs and expand access to smoking cessation services across China.

Keywords: Cognitive behavioral therapy (CBT), Acceptability, Feasibility, Smoking cessation, Smartphone app, China

Introduction

Tobacco use, particularly cigarette smoking, continues to pose a major but preventable global public health challenge, resulting in 7.69 million premature deaths and 200 million disability-adjusted life-years in 2019 alone

[1]. China, with over 300 million smokers, consumes roughly 40% of the world's cigarettes, and smoking among urban men has risen considerably over the past thirty years [2]. Although China ratified the WHO Framework Convention on Tobacco Control (FCTC) in 2006 and has implemented stringent tobacco control policies, smoking rates remain high, with more than half of adult men continuing to smoke [2].

In October 2016, the Chinese government launched the Healthy China 2030 (HC 2030) plan, a nationwide strategy to improve public health, including a target to reduce smoking prevalence from 27.7% in 2015 to 20% by 2030 [3, 4]. Achieving this goal requires expanding access to smoking cessation services nationwide. Since

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the first cessation clinic opened in 1996, the number of clinics has grown to over 800. Yet, uptake remains low, with most clinics seeing only one to two patients per week, and over 90% of individuals who relapse receive no treatment or counseling [2, 5]. Contributing factors include high smoking rates and low quit success among male physicians, as well as limited delivery of standardized cessation practices by healthcare providers [6–8]. As a result, few smokers achieve successful quitting despite widespread intentions to do so [9, 10].

Mobile phone-based interventions may help bridge the gap between the demand for cessation support and the limited availability of accessible, evidence-based programs. These interventions are cost-effective, widely accessible once deployed, and can provide anonymous support. Globally, mobile phone-based smoking cessation programs have been shown to be effective [11]. In China, our previous RCT of the text messaging program “Happy Quit” demonstrated its efficacy in supporting smokers to quit [12]. While text messaging and smartphone apps are the most common digital cessation tools, apps offer greater flexibility and potential cost-effectiveness given high smartphone ownership among Chinese adults. However, analyses of existing apps reveal poor adherence to clinical guidelines [13], and there is currently no evaluation of the feasibility or acceptability of smartphone-based cessation apps in China, nor any evidence-based app available.

To address this gap, we developed a smartphone app based on cognitive behavioral therapy (CBT), tailored to the needs of Chinese smokers and aligned with clinical practice guidelines. CBT has proven highly effective in smoking cessation [14], addressing challenges such as self-efficacy, motivation, stress management, relapse prevention, and weight concerns, all of which support sustained abstinence. Detailed descriptions of the app and its features are provided in our published protocol [15].

This study aimed to examine the feasibility and acceptability of this CBT-based app through user satisfaction and engagement, as well as its preliminary efficacy, assessed via self-reported 7-day point prevalence abstinence at weeks 1, 2, and 4, and 33-day continuous abstinence. Given CBT’s established role as the standard behavioral intervention for smoking cessation [16, 17], we hypothesized that the app would be highly feasible and acceptable in China. Drawing from the “Quit Genius” intervention in the UK, which achieved a 44.5% 7-day point prevalence abstinence rate [18], we further hypothesized that the app would improve

self-reported 7-day point prevalence and 33-day continuous abstinence rates by at least 40%.

Materials and Methods

Study design

This investigation was conducted as an online, open-label, single-arm study to assess a cognitive behavioral therapy (CBT)-based smoking cessation app developed for Chinese users. The program involved a preparatory phase of 7–14 days prior to the quit date, followed by a 33-day intervention period post-quit. The primary goal was to evaluate the program’s feasibility and acceptability, focusing on aspects such as design aesthetics, usability, engagement, and the quality of information, measured via a five-point Likert scale ranging from “strongly agree” to “strongly disagree.” Participants’ overall satisfaction with the app was also recorded. Secondary aims included examining shifts in participants’ attitudes toward quitting between the start (Time 1) and end of the program (Time 2), as well as assessing changes in self-reported 7-day point prevalence abstinence at days 7 and 15, and 2-week point prevalence abstinence at day 33 after the quit date.

Study and recruitment participant

Recruitment occurred from mid-April to mid-May 2020, targeting individuals residing in Changsha and Shanghai through social media platforms including WeChat, QQ, and Weibo. Changsha, a moderately paced city in central-southern China and the capital of Hunan Province, was contrasted with Shanghai, a high-paced financial hub on the eastern coast. Out of 570 initial respondents, 495 completed an online screening and follow-up telephone interview to determine eligibility. A total of 315 were excluded due to insufficient motivation to quit, being older than 45 years, or smoking fewer than five cigarettes daily.

Those who passed screening completed a pre-intervention questionnaire. Ultimately, 180 participants were enrolled (90 from each city), with 163 completing the program (77 from Changsha and 86 from Shanghai; 90.6%). A CONSORT flowchart outlining recruitment and study progression is provided in **Figure 1**.

Eligible participants were aged 20–45, fluent in simplified Chinese, current smokers with a minimum of five cigarettes per day and at least one year of smoking history, motivated to quit, and willing to use the app for cessation support. Motivation was assessed using the

single-item Motivation for Terminating Smoking Scale (MTSS), with scores above 4 indicating adequate motivation. The MTSS spans from 1 (“I do not want to stop smoking”) to 7 (“I REALLY want to stop smoking and plan to quit within the next month”) [19]. Participants were required to use iOS devices (iPhone 6 or later).

Exclusion criteria included having already begun a quit attempt, current use of any smoking cessation treatment, or the presence of severe mental illness.

The trial was registered at ClinicalTrials.gov (NCT04421170).

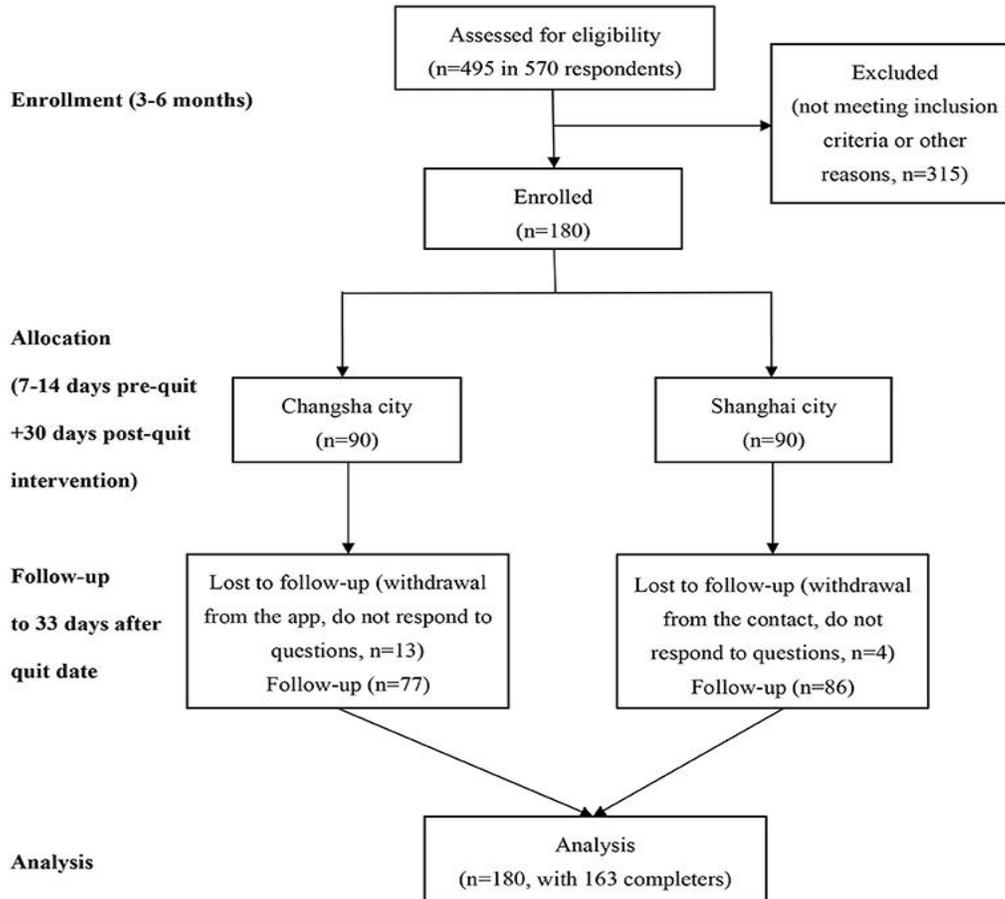


Figure 1. Study flowchart.

Note on exclusions: Participants were excluded if they “did not meet inclusion criteria,” which included having minimal or no motivation to quit, being older than 45 years, or smoking fewer than five cigarettes per day.

Participants were also excluded for “other reasons,” such as losing interest in the study or providing incorrect contact information.

“Cognitive behavioral theory–based smoking cessation” app

The smoking cessation app was designed following cognitive behavioral therapy (CBT) principles, integrating clinical expertise, empirical evidence, and best practices in smoking cessation. The development process was supervised by Dr. Yanhui Liao and Dr. Jinsong Tang. Detailed information about the CBT-based smoking cessation program is provided in the study protocol [15]. Illustrating its key features: the registration

and login interface, main page of the pre-quit stage, examples of CBT exercises such as breathing relaxation, the cigarette consumption tracking page, quit manifesto section, main page of the post-quit stage, CBT tasks including periodic self-reward, notification examples, the SOS (emergency help) function, quitting benefits tracker, and a forum and information module resembling a Twitter-like feed.

Procedure

Each of the 180 eligible participants received an on-site appointment invitation. At the appointment, a research assistant outlined the study objectives, procedures, measurements, and potential risks and benefits. Participants provided written informed consent, were guided through downloading and installing the app on their mobile devices, and completed a baseline survey capturing their first impressions of the app, including overall satisfaction and the ease of registration. Participants then selected a quit date within 7 to 14 days and indicated whether they preferred a gradual or abrupt cessation approach through the app. During the pre-quit phase (7–14 days), they were instructed to interact with the CBT-based smoking cessation app daily and to evaluate their satisfaction with its features, including visual design, functionality, user engagement, and quality of information. In the 33-day post-quit phase, participants reported their smoking status through an in-app web-based questionnaire on days 7, 15, and 33, with additional encouragement to record any smoking attempts as they occurred.

Definition

Overall satisfaction

Satisfaction with app's features of functionality, aesthetics, information and engagement.

Quitter

An individual who reported smoking no more than five cigarettes between their selected quit date and day 33, representing continuous abstinence over the 33-day period.

Non-quitter

An individual who consumed more than five cigarettes during the period from the designated quit date through day 33.

Belief in treatment efficacy

An individual who expressed confidence or agreement that the cognitive behavioral therapy (CBT)-based mobile application for smoking cessation could effectively support their efforts to quit smoking permanently.

Level of nicotine addiction

Nicotine addiction intensity was evaluated using the Fagerström Test for Cigarette Dependence (FTCD). Total scores on the FTCD range from 0 to 10, with scores

of 6 or below reflecting low to moderate addiction, while scores of 7 or above reflect high addiction.

Outcomes and measures

Smoking and demographic characteristics

Demographic variables encompassed age, gender, educational attainment, monthly household income, and marital status. Smoking-related variables included duration of smoking in years, daily cigarette consumption, previous quit attempts, level of motivation to quit, preferred quitting approach (gradual reduction or abrupt cessation), intensity of smoking cravings, and degree of nicotine dependence evaluated using the Fagerström Test for Cigarette Dependence (FTCD).

App satisfaction for the cognitive behavioral therapy-based smoking cessation application

Participants were instructed to use the app daily and to indicate their general satisfaction with the application as well as their satisfaction with specific aspects, including visual design, usability, user engagement, and content quality. Responses were recorded on a five-point Likert scale ranging from “strongly agree,” “somewhat agree,” “neither agree nor disagree,” “somewhat disagree,” to “strongly disagree.” The overall satisfaction rate was determined by the proportion of participants selecting “strongly agree” or “somewhat agree” across all responses. Changes in overall satisfaction from baseline (Time 1) to program completion (Time 2) were assessed using a five-point Likert scale with options from “very satisfied,” “satisfied,” “can't tell,” “unsatisfied,” to “very unsatisfied.” Changes in perceived effectiveness for quitting smoking across the same time points were evaluated on a five-point Likert scale ranging from “strongly believe/agree,” “believe/agree,” “not sure,” “unbelieve/disagree,” to “strongly unbelieve/disagree.” Likelihood of recommending the app to others was measured by the question “How likely would you be to recommend this app to friends,” scored from 0 (extremely unlikely) to 10 (extremely likely).

Self-reported quitting outcomes

Data on self-reported smoking abstinence were gathered throughout the study, including 7-day point prevalence abstinence at days 7 and 15, 2-week point prevalence abstinence at day 33, and continuous abstinence at day 33 following each participant's designated quit date. Abstinence was operationally defined as having smoked no more than five cigarettes within the preceding 7 or 33

days, based on responses to: (a) “How many cigarettes have you smoked in the past week” collected at days 7 and 15 post-quit, and (b) “How many cigarettes have you smoked in the past 2 weeks” collected at day 33 post-quit. Total cigarette counts were then dichotomized into categories of “5 or fewer” versus “more than 5.”

The study hypotheses posited that over 50% of participants would report satisfaction with the app’s features, that engagement with the intervention would yield a substantial increase in short-term cessation success (with at least 40% achieving self-reported 33-day continuous abstinence), and that this CBT-based mobile application would demonstrate high feasibility and acceptability among users in China.

Safety

Participant safety was evaluated through the systematic collection, review, and analysis of spontaneously reported adverse events (AEs). No serious adverse events were reported by any participants during the study.

Data collection

Most of the study data—including demographic information, smoking behaviors, and participants’ feedback on the app—were collected online using WenJuanXing, a Chinese platform specializing in professional online surveys and data collection for clinical trials [20]. Data were exported from the platform as a user-specified Microsoft Excel file. While the app

primarily delivered smoking cessation interventions, only information on the average number of app logins across all stages was extracted for analysis. All data management was overseen by How-To NPD Consulting Company, and personal identifiers were removed to ensure participant privacy.

Statistical analyses

All analyses followed the intention-to-treat (ITT) principle [21], with participants who did not complete follow-up assessments classified as smokers. Due to the electronic nature of data collection and the brief intervention period, only 17 participants (9.44%) did not complete the study. Data analysis was conducted using R programming software. Descriptive statistics summarized baseline demographic and smoking characteristics. Comparisons between participants from Changsha and Shanghai were performed using ANOVA for continuous variables and χ^2 tests for categorical variables. All statistical tests were two-tailed, with *p*-values less than 0.05 considered statistically significant.

Results and Discussion

Participant profiles

Table 1 summarizes the baseline demographic and smoking-related characteristics of the full cohort (*n* = 180), as well as comparisons between participants recruited from Changsha (*n* = 90) and Shanghai (*n* = 90).

Table 1. Overview of smoking and demographic characteristics for all participants, with separate data for Changsha and Shanghai subgroups.

Characteristic	All Samples (N=180)	Changsha (N=90)	Shanghai (N=90)	<i>p</i> - value
Demographic Characteristics				
Age, years (mean ± SD)	31.6 ± 6.33	30.6 ± 5.81	32.5 ± 6.71	0.046
Age group				
20–30 years (n, %)	85 (47.2%)	49 (54.4%)	36 (40.0%)	0.070
31–45 years (n, %)	95 (52.8%)	41 (45.6%)	54 (60.0%)	
Gender (n, %)				
Male	161 (89.4%)	80 (88.9%)	81 (90.0%)	1.000
Female	19 (10.6%)	10 (11.1%)	9 (10.0%)	
Education level (n, %)				
High school to college	93 (51.7%)	57 (63.3%)	36 (40.0%)	0.003
Bachelor's degree or higher	87 (48.3%)	33 (36.7%)	54 (60.0%)	
Monthly household income (n, %)				
<15,000 CNY	58 (32.2%)	45 (50.0%)	13 (14.4%)	<0.001

≥15,000 CNY	122 (67.8%)	45 (50.0%)	77 (85.6%)	
Marital status (n, %)				
Unmarried	74 (41.1%)	36 (40.0%)	38 (42.2%)	0.899
Married (no children)	17 (9.4%)	8 (8.9%)	9 (10.0%)	
Married (with children)	89 (49.4%)	46 (51.1%)	43 (47.8%)	
Smoking Characteristics				
Duration of smoking (n, %)				
1–5 years	67 (37.2%)	38 (42.2%)	29 (32.2%)	0.217
>5 years	113 (62.8%)	52 (57.8%)	61 (67.8%)	
Daily cigarette consumption (n, %)				
5–10 cigarettes	80 (44.4%)	39 (43.3%)	41 (45.6%)	0.881
>10 cigarettes	100 (55.6%)	51 (56.7%)	49 (54.4%)	
Fagerström Test for Cigarette Dependence (FTCD) score (mean ± SD)	4.8 ± 2.03	4.1 ± 2.18	5.4 ± 1.66	<0.001
Nicotine dependence level (n, %)				
Light to moderate (FTCD <6)	87 (48.3%)	58 (64.4%)	29 (32.2%)	<0.001
Heavy (FTCD ≥6)	93 (51.7%)	32 (35.6%)	61 (67.8%)	
Quit attempts in past 12 months (n, %)				
Yes	180 (100%)	90 (100%)	90 (100%)	–
Preferred Smoking Cessation Approach (n=163*, n, %)				
Gradual reduction	111 (68.1%)	48 (62.3%)	63 (73.3%)	0.185
Cold turkey (abrupt cessation)	52 (31.9%)	29 (37.7%)	23 (26.7%)	
Preparation Period Before Quit Date (n=163*, n, %)				
7 days	93 (57.1%)	58 (75.3%)	35 (40.7%)	<0.001
8–14 days	70 (42.9%)	19 (24.7%)	51 (59.3%)	

The Fagerström Test for Cigarette Dependence (FTCD) was used to evaluate nicotine dependence levels. Participants with total FTCD scores of 6 or lower were classified as light to moderate smokers, while those with scores ranging from 7 to 10 were classified as heavy smokers.

App Backend Data (N = 163)

User satisfaction with the cognitive behavioral therapy-based smoking cessation app

Over 70% of participants (ranging from 76% to 89%) accessed the app more than once daily. Participants showed a greater willingness to recommend the app to friends at the program's conclusion compared to the starting phase.

Overall satisfaction levels with the app throughout the different stages are presented in **Figure 2**. Around 90% of participants reported satisfaction with the app at each assessment point. A statistically significant increase in

overall satisfaction was noted, rising from 93% at baseline (Time 1) to 98% at program completion (Time 2, day 33 post-quit; $p = 0.021$). Perceived effectiveness of the app in facilitating smoking cessation—measured as the percentage of participants who believed or agreed that the app could help them quit—is depicted in **Figure 3**. This perception improved substantially over time, with the proportion endorsing the app's helpfulness increasing from 69% at baseline to 97% by day 33 after the quit date ($p < 0.001$).

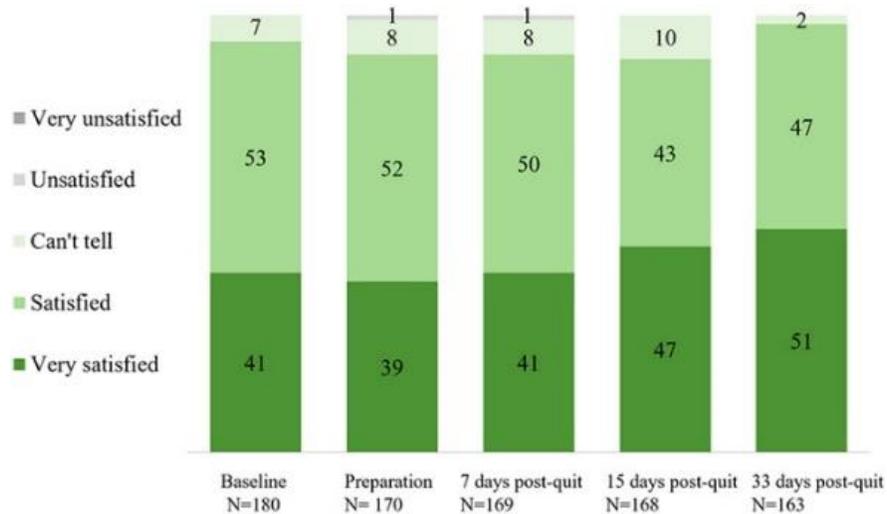


Figure 2. Stage-wise distribution of participants' reported satisfaction with the CBT-informed smoking cessation app (%).

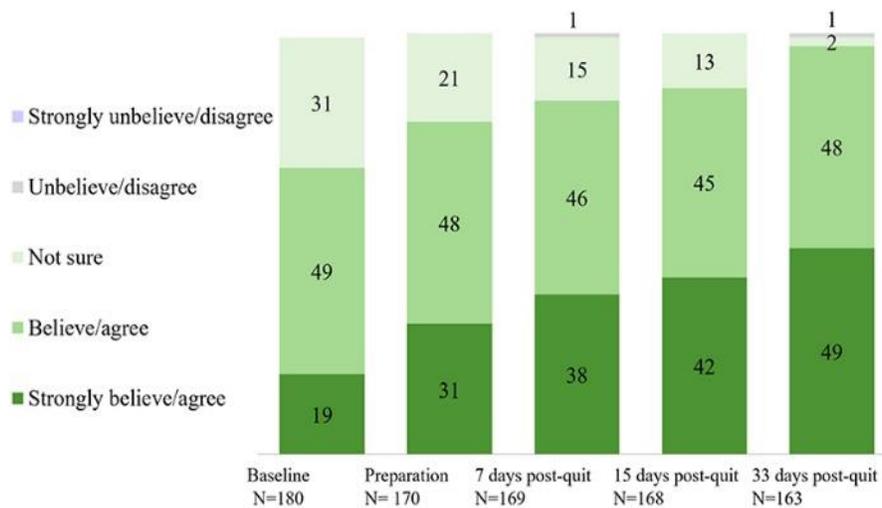


Figure 3. Percentage of participants expressing confidence that the app could support their smoking cessation efforts.

Self-reported satisfaction for the app's four key components—visual design, functionality, user engagement, and information quality—is summarized in

Table 2. Overall, participants expressed high satisfaction with most features (ranging from 80% to over 90%), with the information component receiving the highest ratings.

Table 2. Proportion of participants reporting satisfaction with individual app features.

Features	Satisfied/Agreed (%)
Aesthetics	
The app presents a visually appealing layout and design	86
Color combinations and overall style are attractive to users	85
Icons are intuitive and easy to recognize	85
The interface is organized clearly, avoiding confusion	85
The overall user interface is well-designed and user-friendly	89
Functionality	

The app is simple to locate and download	77
Registration is quick and straightforward	94
Navigation within the app is intuitive	87
Most users would be able to learn how to use the app quickly	90
Moving through the app is smooth and user-friendly	89
Information is easy to access within the app	88
The app responds promptly to user actions	91
App performance is stable and reliable	91
Storyline elements (dessert, ocean, new chapter) are engaging	91
Users can easily navigate all sections of the app	95
All app functions are clear and understandable	80
Instructions and rules are straightforward and easy to follow	91
Completing assigned tasks throughout the app experience is easy	93
Engagement	
The survey is tailored to my personal experience	78
Using the app is enjoyable and keeps me motivated	85
Tasks are engaging and capture my interest	68
Activities promote interaction and active involvement	76
Tasks are meaningful and relevant to me	83
Assignments feel individualized for my use	68
Overall experience with using the app is positive	90
How would you rate your overall experience with the app?	98
After using the app, how likely are you to recommend it to a friend trying to quit smoking?	75
Would you be willing to share your quitting journey in the app to support others?	86
Would you like to continue using the app if it remains accessible?	95
Information	
To what extent do you believe this app can help you successfully quit smoking?	87
The tasks provided by the app are useful in supporting smoking cessation	91
How would you evaluate your progress in this quit attempt using the app so far?	97
How would you describe your cigarette cravings over the past two weeks?	99
How would you describe your cigarette cravings over the past month?	98
Do you consider this app effective in aiding smoking cessation?	97

Intervention outcomes: self-reported smoking abstinence

Using an intention-to-treat (ITT) approach, 63.9% of participants (n = 115) reported maintaining continuous abstinence from smoking for 33 days following their quit date. The proportion of participants achieving 33-day continuous abstinence was significantly greater among those recruited from Shanghai (71%) compared with those from Changsha (44%), with this difference reaching statistical significance ($p < 0.001$). Regarding short-term outcomes, the self-reported 7-day point prevalence abstinence rate was 81.7% (n = 147) at 7 days post-quit, increased to 87.2% (n = 157) at 15 days post-quit, and declined slightly to 77.8% (n = 140) when

assessed as a two-week point prevalence at 33 days after the quit date.

Principal findings

This single-arm cohort study represents the first known investigation of a cognitive behavioral therapy (CBT)-based mobile application designed for smoking cessation among treatment-seeking smokers in China, a country that is home to over 300 million active smokers. The findings indicate strong engagement with the intervention, as more than 90% of enrolled participants completed the full program. User evaluations of the app were highly favorable, with approximately 90%

reporting satisfaction across all stages of use. Furthermore, more than 60% of participants maintained smoking abstinence from the scheduled quit date through the conclusion of the intervention, which occurred 33 days later. Together, these outcomes suggest that the CBT-based smartphone app is not only feasible and acceptable but also demonstrates promising early effectiveness for supporting smoking cessation in the Chinese context.

Program satisfaction

Participants consistently expressed high satisfaction with the app from baseline through program completion, across several key domains including visual appeal, operational performance, user engagement, and the quality of educational content. Among these areas, informational components received the highest ratings. These results align with prior evaluations of evidence-based cessation apps such as “Explore” and “QuitGuide,” both informed by the US Clinical Practice Guidelines [22], as well as “iCanQuit,” which is grounded in acceptance and commitment therapy [23].

Importantly, satisfaction levels increased over time, with higher ratings observed at the end of the intervention compared with the initial stage. Participants also demonstrated a significant increase in confidence that the program could help them successfully quit smoking by the end of the study. Overall, the app was well regarded for its structured cessation pathway and the simplicity of using its core functions. Nevertheless, several areas were identified for further refinement. Features related to task personalization and task enjoyment received comparatively lower ratings, each endorsed by only 68% of participants, indicating a need for more tailored and engaging content.

Regarding individual features, most users rated the CBT-based exercises and smoking progress feedback as both important to quitting and easy to use. In contrast, while the “SOS” function and smoking log were considered valuable tools for cessation, they were perceived as less convenient, suggesting usability improvements are warranted. Social interaction features, such as the Twitter-like forum, as well as automated intervention notifications, were viewed as less essential, potentially because participants did not perceive them as directly contributing to smoking cessation outcomes.

Program efficacy

The intervention yielded encouraging smoking cessation outcomes, with a relatively high rate of self-reported abstinence. Specifically, 63.9% of participants reported continuous abstinence over the 33-day post-quit date period. In addition, self-reported 7-day point prevalence abstinence rates at the quit date ranged between 78% and 88%, which is substantially higher than those reported for the text message-based “Happy Quit” program (approximately 10% to less than 30%) [12]. These results support the potential effectiveness of smartphone-based interventions as tools for smoking cessation. Cognitive behavioral therapy-based strategies, in particular, have been identified as among the most effective and strongly recommended approaches for supporting smoking cessation [14]. Consistent with this evidence, an English-language CBT-based smoking cessation app (Quit Genius) has been shown not only to facilitate smoking abstinence but also to improve users’ mental health and overall well-being [24].

The study also revealed notable regional differences in cessation outcomes. Participants recruited from Shanghai City demonstrated a significantly higher 33-day self-reported continuous abstinence rate (exceeding 70%) compared with those from Changsha City (below 50%). Compared with participants in Changsha, those from Shanghai tended to be older, have higher levels of education, earn higher incomes, and exhibit greater nicotine dependence. Although prior research suggests that lighter smokers are generally more likely to quit successfully without pharmacotherapy [25], and that mobile health interventions can increase treatment exposure among socioeconomically disadvantaged smokers [26], the higher quit rates observed in Shanghai may point to the important role of educational attainment in app-based smoking cessation. These findings suggest that sociodemographic characteristics may influence abstinence outcomes and warrant further investigation in future studies. Given its demonstrated efficacy, this CBT-based smartphone app—similar to “CureApp Smoking Cessation” [27]—has the potential to be integrated with standard clinical smoking cessation programs to enhance long-term abstinence outcomes.

Limitations

Several limitations should be acknowledged. First, the study employed a single-arm cohort design with a relatively small sample size and focused only on a short intervention window, including 7–14 days before the quit date and 33 days after quitting. As a result, long-term

smoking cessation outcomes could not be evaluated. Second, participants were recruited from only two cities in China, which may limit the generalizability of the findings to other regions or populations. Third, although none of the participants reported using additional smoking cessation strategies, it is possible that some may have engaged in other forms of support during the study period. Finally, smoking abstinence was assessed solely through self-report without biological verification, which may have introduced reporting bias and potentially influenced the observed short-term cessation outcomes.

Conclusion

Despite these limitations, the results provide clear support for the feasibility and user acceptability of the CBT-based smartphone app as a smoking cessation intervention. Notably, participants reported a significant increase in overall satisfaction with the app, along with a growing belief from baseline to program completion that the app could effectively help them quit smoking. To validate and expand upon these preliminary results, a large-scale randomized controlled trial is currently in progress to assess the long-term effectiveness of this CBT-based application among smokers in China [15]. By proposing a novel digital treatment approach, this study highlights the potential of mobile health interventions to reduce barriers associated with traditional face-to-face cessation services and to broaden the reach of smoking cessation support nationwide in China.

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Conflict of Interest: None

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Ethics Statement: None

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