



Effects of Abstinence Self-Efficacy and Outcome Expectancies of Tobacco Smoking on the Desire to Quit Among Saudi Women: A Cross-Sectional Mediation Analysis

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ABSTRACT

BACKGROUND: Smoking is one of the major preventable causes of morbidity and mortality and has been associated with numerous illnesses. While smoking is increasing among Saudi women, the characteristics of smoking behavior related to abstinence self-efficacy, which is a belief regarding one's ability to successfully resist performing a behavior, and outcome expectancies, meaning the anticipated consequences of performing a behavior, are unknown. Therefore, this study aimed to test whether abstinence self-efficacy mediated the relationship between tobacco smoking outcome expectancies and the desire to quit tobacco among Saudi women who smoke.

METHODS: This cross-sectional study collected a sample of 211 Saudi women who smoked tobacco, including cigarettes and shisha. A self-administered questionnaire was used to examine several variables, including abstinence self-efficacy, outcome expectancies, and desire to quit tobacco smoking. Mediation path analysis was used to answer the research question. Indirect effects were estimated through a bootstrapping of 10,000.

RESULTS: All 4 constructs of outcome expectancies (negative consequences, positive reinforcement, negative reinforcement, and appetite/weight control) were associated with lower abstinence self-efficacy and desire to quit tobacco smoking. In the mediation analysis, the indirect effect of negative consequences (standardized beta = $-.013$, SE = $.008$, 95% CI [$-.030$, $-.001$]), negative reinforcement (standardized beta = $-.012$, SE = $.006$, 95% CI [$-.025$, $-.001$]), and appetite/weight control (standardized beta = $-.008$, SE = $.006$, 95% CI [$-.022$, $-.001$]) through abstinence self-efficacy were significant, suggesting mediation in the relationship between outcome expectancies and desire to quit tobacco smoking.

CONCLUSION: Cognitive mechanisms that may explain the desire to quit tobacco smoking among Saudi women were identified. Although future longitudinal studies are required to determine relationships prospectively, targeted interventions that correct tobacco smoking outcome expectancies and boost abstinence self-efficacy skills may reduce tobacco smoking among Saudi women.

KEYWORDS: tobacco, smoking, self-efficacy, expectancies, treatment, women

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Introduction

Smoking is one of the major preventable causes of morbidity and mortality.¹ It has been associated with numerous illnesses including cancer and respiratory diseases.² Globally, tobacco use is responsible for the premature death of approximately 8 million people annually.³ Approximately 23% of adults, including over 1 billion men and 244 million women, smoke tobacco products worldwide.⁴ It is expected that there will be 30

million fewer female smokers by 2025 globally.⁴ However, depending on the context, some women prefer not to share their tobacco smoking behavior,⁵ particularly in Arab countries, where women have historically been stigmatized for using tobacco due to the strong impact of culture and tradition.⁶

Tobacco smoking in Saudi Arabian culture is considered unacceptable among both genders, but is deemed more unacceptable among women.⁷ During the last decade, tobacco



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smoking among women in Saudi Arabia (SA) increased from 1% in 2013 to 1.6% in 2018 and 2.5% in 2019.⁸⁻¹⁰ Tobacco smoking initiation among Saudi women is often the result of being surrounded by peers who believe that smoking is fashionable,¹¹ improved gender equality through female empowerment in society, availability of social smoking in public restaurants, and accessibility of tobacco product points of sales.^{7,12}

Saudi Arabia has implemented many health policies in the past decade aimed to reduce tobacco use among its population.¹³ In particular, several smoking cessation clinics that provide free treatment and mobile clinic projects that provide faster and easier services have been established.¹⁴ Furthermore, the General Authority of Zakat and Tax applied 100% taxation on tobacco products, and the Ministry of Health (MOH) launched a number of campaigns to raise anti-smoking awareness.^{13,14} As a result, more women in SA were encouraged to declare their smoking behaviors and seek tobacco cessation assistance.¹¹ However, to optimize tobacco cessation assistance for women, the mechanism that influences the desire to quit tobacco smoking among Saudi women should be understood.

Social cognitive theory (SCT), a prominent theory of cognitive mechanisms, may partly clarify the desire to use and quit tobacco smoking.¹⁵ Specifically, tobacco smoking outcome expectancies, which are the anticipated consequences of performing a behavior,¹⁶ and tobacco smoking abstinence self-efficacy, meaning belief regarding one's ability to successfully resist performing a behavior,¹⁷ are involved in the cognitive processes of undertaking and avoiding tobacco smoking. Outcome expectancies of tobacco smoking were associated with the desire to quit and clinically employed with motivational interviewing techniques to encourage smokers to consider different outcomes associated with smoking treatment such as behavioral and pharmacologic withdrawals, and physical functioning improvement.¹⁸⁻²⁰ Alternatively, a meta-analysis of 54 studies concluded that higher abstinence self-efficacy was associated with successful tobacco cessation treatment.²¹

Because the cognitive mechanisms are dynamic and reciprocal,²²⁻²⁴ and outcome expectancy influences the perceptions of self-efficacy,²⁵ it is expected that tobacco smoking outcome expectancies will strengthen or weaken the ability to abstain from tobacco smoking, that is, abstinence self-efficacy. Furthermore, given the importance of tobacco cessation assistance among women and the unique perspectives of Saudi culture, there is no evidence that outcome expectancies and abstinence self-efficacy of tobacco smoking predict the desire to quit among Saudi women. Therefore, this study aimed to assess the relationship between abstinence self-efficacy, outcome expectancies, and desire to quit tobacco smoking among Saudi women. The study hypothesis was that abstinence self-efficacy mediates the relationship between outcome expectancies and desire to quit tobacco smoking.

Methods

Participants and Procedure

This cross-sectional study recruited 211 Saudi women 18 years of age or older who smoked tobacco, including cigarettes and hookah, using a word-of-mouth approach. All instruments were translated from English to Arabic in 2 steps. First, forward-backward translations of three linguistics were sought to ensure the accuracy of item content. Second, cultural adaptation of the questions was conducted by distributing the questionnaire battery to ten women who smoked to assess the clarity of each question. The final questionnaire battery was distributed to the target sample. The study was approved by the Institutional Review Board (IRB) of King Abdullah International Medical Research Center. Participation in the study was voluntary. Written informed consent was obtained from the participants prior to conducting the study. The study was conducted from April to August 2021.

Demographics and Reasons to Smoke

A self-reported survey using original items collected information on the participants age, marital status (single, married, or divorced), occupational status (employed, unemployed, or student), highest educational level (high school, diploma, bachelor's degree, master's degree or medical specialty, or PhD or medical sub-specialty), and perceived household/family income (low, middle, high, or very high). The individuals were considered tobacco smokers if they had even one puff of smoked tobacco cigarettes or tobacco hookah in the past month. Additionally, reasons that motivated the participants to smoke, including curiosity, friends' influence, family influence, stress control, anger management, weight control, boredom, need to concentrate, need to feel happy, need to feel relaxed, need to feel attractive, need to feel classy, need to look beautiful, need to be friendly, need to have more friends, and need to attend parties, were evaluated. Responses were dummy coded (no = 0, yes = 1).

Desire to Quit

The desire to quit tobacco smoking was assessed with a single item: "What is your desire to quit tobacco smoking in the future?" The participants provided answers on a ten-point Likert scale (0 = no desire at all, 9 = highest desire to quit).

Abstinence Self-Efficacy

Tobacco smoking abstinence self-efficacy was assessed using the Smoking Abstinence Self-Efficacy Questionnaire (SASEQ),²⁶ which is a short, reliable, and valid instrument with 8 items that assess self-efficacy beliefs to predict smoking abstinence among smokers. The SASEQ is divided into 2 categories: emotional (e.g., "You feel agitated or tense. Are you confident that you will not smoke?") and social (e.g., "Someone offers you a cigarette of

Table 1. Sociodemographic Characteristics of Women Smoker Participants and Reasons to Smoke Tobacco, Saudi Arabia, 2021.

VARIABLE	PERCENTAGE/MEAN (SD)
Age	23.84 (4.52)
Marital status	
Single	78.6%
Married	17.1%
Divorced	4.3%
Occupational status	
Have a job	29.5%
Do not have a job	23.2%
Student	47.3%
Highest educational degree	
High school	32.9%
Diploma	8.6%
Bachelor	54.3%
Master/medical specialty	3.2%
PhD/medical sub-specialty	1.0%
Perceived household/family income	
Low	21.3%
Middle	63.8%
High	13.5%
Very high	1.4%
The reasons to smoke	
Variable	%
Curiosity	61.4
Friends influence	36.7
Family influence	17.4
Stress contro	23.7
Anger management	19.8
Weight control	3.9
Boredom	30.9
Need to concentrate	7.7
Need to feel happy	21.7
Need to feel relaxed	27.1
Need to feel attractive	6.8
Need to feel classy	1.9
Need to look beautiful	1.9
Need to be friendly	1.4
Need to have more friends	2.4
Need to attend parties	3.4

N = 211. SD, standard deviation.

your own brand. Are you confident that you will not smoke?”). A five-point Likert scale was used to assess responses (0 = certainly not, 1 = probably not, 2 = neutral/I do not know, 3 = probably, 4 = certainly). Answers were aggregated (0-24), with higher scores indicating greater abstinence self-efficacy (Supplemental file 1).

Table 2. Desire to Quit Tobacco Smoking, Abstinence Self-Efficacy and Outcome Expectancies of Tobacco Smoking Among Women Smokers, Saudi Arabia, 2021.

VARIABLE	RANGE	MEAN (SD)
Desire to quit	0-9	5.86 (3.53)
Abstinence self-efficacy	0-24	12.37 (7.59)
Outcome expectancies		
Negative consequences	0-36	23.45 (11.23)
Positive reinforcement	0-45	26.85 (15.66)
Negative reinforcement	0-63	28.88 (22.52)
Appetite/weight control	0-45	16.46 (14.42)

N = 211. SD, standard deviation.

Outcome Expectancies

The short form smoking consequences questionnaire (S-SCQ), which contains 21 items, was used to assess tobacco smoking outcome expectancies.²⁷ The S-SCQ is a valid and reliable instrument that is divided into 4 constructs, 4 items on negative consequences (e.g., “The more I smoke, the more I risk my health”), 5 items on positive reinforcement (e.g., “Cigarettes/shisha taste good”), 7 items on negative reinforcement (e.g., “Cigarettes/shisha help me deal with anxiety or worry”), and 5 items on appetite/weight control (e.g., “Smoking controls my appetite”). Each item was assessed on its chance of occurrence using a ten-point Likert scale (0 = completely unlikely, 9 = completely likely). The items of each construct were aggregated and assessed solely (Supplemental file 2).

Data Analysis

Descriptive statistics were conducted on the demographics. The mediational path models of abstinence self-efficacy as a mediator of the relationship between outcome expectancies and the desire to quit were examined. As this study was cross-sectional, causality of outcome expectancies, abstinence self-efficacy, and desire to quit could not be determined; therefore, the directional path of the mediation models was assumed based on empirical literature.²⁸ Hence the cognitive mechanisms are reciprocal,^{23,24} our assumption was that outcome expectancies would influence abstinence self-efficacy which in turn it would affect the desire to quit among women who smoke.

This study used SPSS version 26 to conduct the analysis and PROCESS Macro to assess the mediation pathway. Indirect effects and standard errors were computed using 10,000 bootstrapped samples, and *P*-values < .05 were considered statistically significant. The demographics of age, marital status, occupational status, highest educational degree, and perceived household/family income were used as covariates for mediational path models.

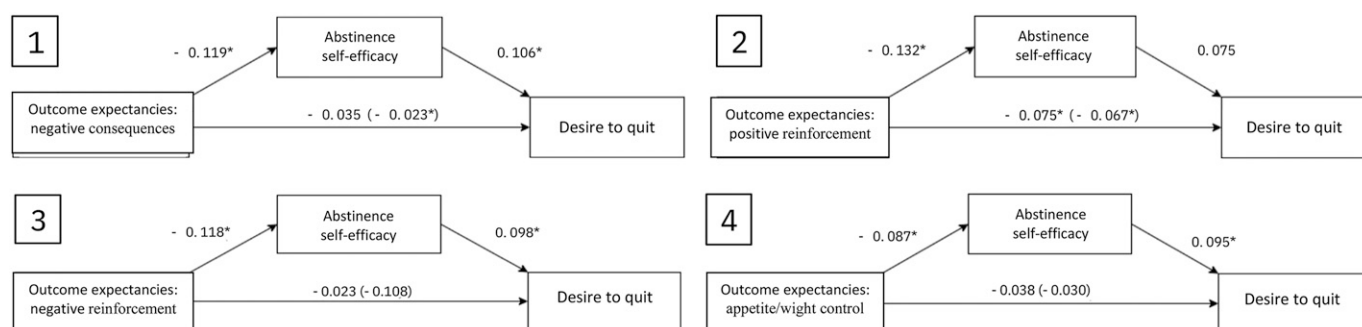


Figure 1. Mediation path model of the relationships between outcome expectancies' constructs (1 = negative consequences, 2 = positive reinforcement, 3 = negative reinforcement, and 4 = appetite/wight control), abstinence self-efficacy, and desire to quit tobacco smoking in the future among Saudi women who smoke. The models were controlled for age, highest educational degree, perceived income, and occupational status. Reported statistics are standardized regression coefficients. The value in parentheses is the direct effect of each outcome expectancy's construct. $n = 211$. * $P < .05$.

Results

Sample Characteristics

The mean age of the participants was 23.84 ± 4.52 years (Table 1). Furthermore, 79% were single, 47% were students, 54% hold a bachelor's degree, and 64% had perceived household/family income as middle. Of the 16 reasons to initiate smoking, 61.4% of the participants reported curiosity as a reason, followed by friends' influence, boredom, need to feel relaxed, stress control, need to feel happy, anger management, family influence, need to concentrate, need to feel attractive, weight control, need to attend parties, need to have more friends, need to look beautiful, need to feel classy, and need to be friendly.

Table 2 shows the computed behavioral constructs of abstinence self-efficacy, outcome expectancies, and desire to quit. Most participants revealed a significant desire to quit with medium abstinence self-efficacy. For outcome expectancies, the participants reported high negative consequences and positive reinforcement, and low negative reinforcement and appetite/weight control.

Mediation Analysis

Figure 1 depicts 4 mediational path models of the relations between outcome expectancy constructs and desire to quit through abstinence self-efficacy. The direct effect of the negative consequences construct on the desire to quit was not statistically significant (standardized beta = $-.012$, standard error [SE] = $.027$, 95% confidence interval [CI] [$-.065$, $.041$]). However, the negative consequences construct was associated with abstinence self-efficacy, which was, in turn, a significant predictor of the desire to quit. Consistent with mediation, the indirect effect of the negative consequences construct through abstinence self-efficacy was significant (standardized beta = $-.013$, SE = $.008$, 95% CI [$-.030$, $-.001$]).

The direct effect of the positive reinforcement construct on the desire to quit was statistically significant (standardized beta = $-.065$, SE = $.020$, 95% CI [$-.105$, $-.025$]). Moreover, the positive reinforcement construct was associated with abstinence

self-efficacy, which was, in turn, a significant predictor of the desire to quit. However, the indirect effect of the positive reinforcement construct through abstinence self-efficacy was not significant (standardized beta = $-.001$, SE = $.007$, 95% CI [$-.024$, $.002$]).

The direct effect of the negative reinforcement construct on the desire to quit was not statistically significant (standardized beta = $-.005$, SE = $.014$, 95% CI [$-.032$, $.023$]). However, the negative reinforcement construct was associated with abstinence self-efficacy, which was, in turn, a significant predictor of the desire to quit. Consistent with mediation, the indirect effect of the negative reinforcement construct through abstinence self-efficacy was significant (standardized beta = $-.012$, SE = $.006$, 95% CI [$-.025$, $-.001$]).

The direct effect of the appetite/weight control construct on the desire to quit was not statistically significant (standardized beta = $-.025$, SE = $.020$, 95% CI [$-.064$, $.014$]). Nevertheless, the appetite/weight control construct was associated with abstinence self-efficacy, which was, in turn, a significant predictor of the desire to quit. Consistent with mediation, the indirect effect of the appetite/weight control construct through abstinence self-efficacy was significant (standardized beta = $-.008$, SE = $.006$, 95% CI [$-.022$, $-.001$]).

Discussion

This study was conceptualized to assess whether abstinence self-efficacy mediated the relationship between outcome expectancies and the desire to quit smoking among Saudi women. Consistent with extant studies,^{16,21} the findings revealed that greater abstinence self-efficacy was associated with a greater desire to quit. Furthermore, abstinence self-efficacy was associated with the relationship between negative consequences, negative reinforcement, and appetite/weight control on outcome expectancies and the desire to quit.

Although abstinence self-efficacy was associated with a greater desire to quit, outcome expectancies were associated with lower abstinence self-efficacy, implying that the effect of abstinence self-efficacy was minimized by women's outcome

expectancies, which governed the desire to quit within the present models. Specifically, from the 4 constructs of outcome expectancies, 3 constructs had significant associations with abstinence self-efficacy. Two constructs were associated with lower abstinence self-efficacy, namely negative consequences and negative reinforcement, participants who had negative thoughts regarding tobacco smoking required greater self-efficacy to refrain from smoking. However, other studies have noted the effects of nicotine craving and dependence on the negative consequences, negative reinforcement, and abstinence self-efficacy, such association was stronger among less nicotine dependent.^{29,30} Future direction may assess the moderation effect of nicotine craving and dependence to better understand the relationship between outcome expectancies and abstinence self-efficacy among Saudi women who smoke.

However, the appetite/weight control construct of tobacco smoking outcome expectancies was associated with lower abstinence self-efficacy of tobacco smoking. Smoking-specific weight concerns have been reported to be consistently greater among women than men.^{31,32} Although weight gain after smoking cessation was lower among women,³³ it remains a barrier to seeking tobacco smoking treatment.³⁴ Numerous approaches have been documented to lessen weight gain concerns with smoking cessation that, including cognitive approaches of body image,^{35,36} calorie restriction,^{37,38} and physical activity,^{39,40} which could integrate actively with smoking cessation services for women.

These findings highlighted on modeling corrective outcome expectancies and enabling abstinence self-efficacy skills within tobacco treatment services. Individual and group counseling should mutually integrate outcome expectancies and abstinence self-efficacy to improve the desire to quit among women.^{16,21} However, outcome expectancies should be considered in the cultural framework of SA to accurately design health messages and counseling tailored to women. Joint methods, such as social persuasion of mastering desirable behaviors and physiological feedback to cope with stress and optimize health functioning, may be integrated within tobacco treatment services to boost abstinence self-efficacy.⁴¹

These findings should be of interest to SA stakeholders to enforce health policies of tobacco control and tobacco cessation assistance. For instance, tobacco smoking lounges are spreading in major SA cities as a sort of entertainment and recreation that diffuses the social norms of smoking in public places.⁴² Therefore, enforcement of government health policies that promote smoke-free places may increase the desire to quit and encourage smokers to refrain from smoking. Furthermore, existing tobacco treatment services should exemplify social learning through abstinence role models, for example, successful experiences of peers or parents who have quit smoking,⁴³ which may boost abstinence self-efficacy skills among treatment-seeking women. These suggestions could serve as proxies for clinicians and stakeholders to ultimately increase cessation attempts among Saudi women who smoke.

This study had several limitations. First, the sample size was small due to the difficulty in recruiting women who smoke in the conservative society of SA. Second, there was a potential selection bias due to the convenience sampling approach that was adopted. Third, the instruments were self-reported, which increased the social desirability bias. Fourth, as this study was cross-sectional, causality of outcome expectancies, abstinence self-efficacy, and desire to quit tobacco smoking could not be determined. Although the study sample was similar to a recent national study⁹ in SA with respect to age, marital status, and educational attainment, the findings may not be generalizable to the general population of Saudi women. Finally, to increase the sample size, cigarette tobacco and hookah tobacco were merged into tobacco smoking in general but were not analyzed separately.

Conclusions

This study provided the first assessment of abstinence self-efficacy and outcome expectancies of tobacco smoking among Saudi women. Partially in line with the initial hypothesis, abstinence self-efficacy mediated the effect of negative consequences, negative reinforcement, and appetite/weight control on outcome expectancies and desire to quit tobacco smoking. These findings indicate potential avenues for preventing tobacco smoking and optimizing smoking cessation services among Saudi women.

Author Contributions

AMA: Conceptualization, Analysis, Manuscript writing; SFA, AAA, FJA, and LHA: Data curation and collection; TFA, SAA, SSM, and TTI: Manuscript writing and editing.

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REFERENCES

- Källberg H, Ding B, Padyukov L, et al. Smoking is a major preventable risk factor for rheumatoid arthritis: estimations of risks after various exposures to cigarette smoke. *Ann Rheum Dis*. 2011;70(3):508-511.
- Lushniak BD, Samet JM, Pechacek TF, Norman LA, Taylor PA. *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General*. New York, NY: CDC; 2014.
- Organization WHO. *WHO Global Report on Trends in Prevalence of Tobacco Smoking 2015*. Geneva, Switzerland: World Health Organization; 2015.
- Organization WHO. *WHO Launches New Report on Global Tobacco Use Trends*. Geneva, Switzerland: World Health Organization [WHO]; 2019.
- Organization WHO. *WHO Report on the Global Tobacco Epidemic 2021: Addressing New and Emerging Products*. Geneva, Switzerland: World Health Organization; 2021.
- Lopez AD, Collishaw NE, Piha T. A descriptive model of the cigarette epidemic in developed countries. *Tobac Control*. 1994;3(3):242-247.
- Abdulghani HM, Alrowais NA, Alhaqwi AI, et al. Cigarette smoking among female students in five medical and nonmedical colleges. *Int J Gen Med*. 2013;6:719-727.
- Moradi-Lakeh M, El Bcheraoui C, Tuffaha M, et al. Tobacco consumption in the Kingdom of Saudi Arabia, 2013: findings from a national survey. *BMC Public Health*. 2015;15(1):611.
- Algabbani AM, Almubark R, Althumiri N, Alqahtani A, BinDhim N. The prevalence of cigarette smoking in Saudi Arabia in 2018. *Food and Drug Regulatory Science Journal* 2018;5(5):6.

10. WHO. Global adult tobacco survey, kingdom of Saudi Arabia, fact sheet. 2019. https://cdn.who.int/media/docs/default-source/ncds/ncd-surveillance/data-reporting/saudi-arabia/ksa_gats_2019_factsheet_rev_4feb2021-508.pdf?sfvrsn=c349a97a_1&download=true. Accessed February 1, 2020.
11. Al-Nimr YM, Farhat G, Alwadey A. Factors affecting smoking initiation and cessation among Saudi women attending smoking cessation clinics. *Sultan Qaboos Univ Med J*. 2020;20(1):e95.
12. Abdulrashid OA, Balbaid O, Ibrahim A, Shah HBU. Factors contributing to the upsurge of water-pipe tobacco smoking among Saudi females in selected Jeddah cafés and restaurants: a mixed method study. *J Fam Community Med*. 2018;25(1):13-19.
13. Hassounah MM, Al-Zalabani AH, AlAhmari MD, Murriky AA, Makeen AM, Alanazi AM. Implementation of cigarette plain packaging: triadic reactions of consumers, state officials, and tobacco companies—the case of Saudi Arabia. *Int J Environ Res Publ Health*. 2020;17(8):2668.
14. Itumalla R, Aldhmedi B. Combating tobacco use in Saudi Arabia: a review of recent initiatives. *East Mediterr Health J*. 2020;26(7):858-863.
15. Chen CJ, Yeh MC, Tang FI, Yu S. The smoking outcome expectation scale and anti-smoking self-efficacy scale for early adolescents: instrument development and validation. *J Sch Nurs*. 2015;31(5):363-373. doi:10.1177/1059840514560352.
16. Brandon TH, Juliano LM, Copeland AL. *Expectancies for Tobacco Smoking. How Expectancies Shape Experience*. Washington, DC: American Psychological Association; 1999:263-299.
17. Bandura A. The explanatory and predictive scope of self-efficacy theory. *J Soc Clin Psychol*. 1986;4(3):359-373. doi:10.1521/jscp.1986.4.3.359.
18. Kaufmann A, Malloy EJ, Haaga DAF. Examining outcome expectancies for smoking vs. abstinence among adult daily smokers. *Addict Behav*. 2020;102:106140.
19. DiClemente CC, Velasquez MM. Motivational interviewing and the stages of change. *MI*. 2002;2:201-216.
20. Hendricks PS, Wood SB, Hall SM. Smokers' expectancies for abstinence: preliminary results from focus groups. *Psychol Addict Behav*. 2009;23(2):380-385.
21. Gwaltney CJ, Metrik J, Kahler CW, Shiffman S. Self-efficacy and smoking cessation: a meta-analysis. *Psychol Addict Behav*. 2009;23(1):56-66.
22. Alidosti M, Tavassoli E. Role of self-efficacy, outcome expectation, and outcome expectancy in promoting oral health behaviors in adolescent girls. *J Educ Health Promot*. 2020;9:254.
23. Williams DM, Anderson ES, Winett RA. A review of the outcome expectancy construct in physical activity research. *Annals of behavioral medicine*. 2005;29(1):70-79.
24. Leganger A, Kraft P, Røysamb E. Perceived self-efficacy in health behaviour research: conceptualisation, measurement and correlates. *Psychol Health*. 2000;15(1):51-69.
25. Maddux JE, Sherer M, Rogers RW. Self-efficacy expectancy and outcome expectancy: their relationship and their effects on behavioral intentions. *Cognit Ther Res*. 1982;6(2):207-211.
26. Spek V, Lemmens F, Chatrou M, van Kempen S, Pouwer F, Pop V. Development of a smoking abstinence self-efficacy Questionnaire. *Int J Behav Med*. 2013;20(3):444-449.
27. Myers MG, MacPherson L, McCarthy DM, Brown SA. Constructing a short form of the smoking consequences questionnaire with adolescents and young adults. *Psychol Assess*. 2003;15(2):163-172.
28. Hayes AF, Rockwood NJ. Conditional process analysis: Concepts, computation, and advances in the modeling of the contingencies of mechanisms. *Am Behav Sci*. 2020;64(1):19-54.
29. Blondé J, Falomir-Pichastor JM. Accounting for the consequences of tobacco dependence on cravings, self-efficacy, and motivation to quit: consideration of identity concerns. *Spanish J Psychol*. 2020;23.
30. Reese ED, Veilleux JC. Relationships between craving beliefs and abstinence self-efficacy are mediated by smoking motives and moderated by nicotine dependence. *Nicotine Tob Res*. 2016;18(1):48-55.
31. Clark MM, Hurt RD, Croghan IT, et al. The prevalence of weight concerns in a smoking abstinence clinical trial. *Addict Behav*. 2006;31(7):1144-1152.
32. Pánková A, Králíková E, Štěpánková L, et al. Weight concerns associated with delay in quit date but not treatment outcomes: a czech republic experience. *Nicotine Tob Res*. 2017;20(1):89-94.
33. Tian J, Venn A, Otahal P, Gall S. The association between quitting smoking and weight gain: a systemic review and meta-analysis of prospective cohort studies. *Obes Rev*. 2015;16(10):883-901.
34. Bush T, Lovejoy JC, Deprey M, Carpenter KM. The effect of tobacco cessation on weight gain, obesity, and diabetes risk. *Obesity*. 2016;24(9):1834-1841.
35. Bush T, Levine MD, Beebe LA. Addressing weight gain in smoking cessation treatment: a randomized controlled trial. *Am J Health Promot*. 2012;27(2):94-102.
36. Leslie WS, Koshy PR, Mackenzie M, et al. Changes in body weight and food choice in those attempting smoking cessation: a cluster randomised controlled trial. *BMC Public Health*. 2012;12(1):389.
37. Danielsson T, Rossner S, Westin A. Open randomised trial of intermittent very low energy diet together with nicotine gum for stopping smoking in women who gained weight in previous attempts to quitCommentary: results are unlikely to be as good in routine practice. *BMJ*. 1999;319(7208):490-494.
38. Spring B, Doran N, Pagoto S, Schneider K, Pingitore R, Hedeker D. Randomized controlled trial for behavioral smoking and weight control treatment: effect of concurrent versus sequential intervention. *J Consult Clin Psychol*. 2004;72(5):785-796.
39. Spring B, Howe D, Berendsen M, et al. Behavioral intervention to promote smoking cessation and prevent weight gain: a systematic review and meta-analysis. *Addiction*. 2009;104(9):1472-1486.
40. Farley AC, Hajek P, Lycett D, Aveyard P. Interventions for preventing weight gain after smoking cessation. *Cochrane Database Syst Rev*. 2012;1:CD006219.
41. Elshatarat RA, Yacoub MI, Khraim FM, Saleh ZT, Afaneh TR. Self-efficacy in treating tobacco use: a review article. *Proceedings of Singapore Healthcare*. 2016;25(4):243-248.
42. New Saudi Rules on Hookah Leave Businesses. Consumers confused. <https://www.arabnews.com/node/1569011/saudi-arabia>. Accessed December.19, 2021.
43. Lin PS. *Role Models' Influence on Smoking Reduction*. Detroit, MI: Wayne State University; 2013.