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Implementation of Social Cognitive Theory on Smoking Cessation

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ABSTRACT

Background: Most people have understood the negative effects of smoking behavior, but not all of them can make the decision to stop the behavior. Like smoking behavior, quitting smoking is also influenced by various factors. This study aimed to analyze smoking cessation behavior in individuals who have quit smoking through Social Cognitive Theory in the Semarang City area.
Subjects and Method: The study was conducted with a cross-sectional study design involving as many as 205 participants, including 123 active smokers and 82 who had quit smoking. This research was conducted in the Semarang City area, Central Java. This research was conducted in March-April 2024. The sample was selected using fixed disease sampling for active smoking participants and snowball sampling for participants who had quit smoking. The dependent variable is smoking cessation behavior. The independent variables are expectation of results, self-regulation, self-efficacy, and strengthening. Data collection was carried out using a questionnaire and the data was analyzed using a path analysis model.
Results: Smoking cessation behavior increased with high self-efficacy (OR= 19.99; 95% CI= 7.46 to 53.62; p<0.001) and strong self-regulation (OR= 3.05; 95% CI= 1.51 to 6.13; p= 0.002). Self-efficacy increased with the expectation of positive results (OR= 8.64; 95% CI= 4.52 to 16.52; p<0.001) and strong self-regulation increases with strengthening (OR = 3.61; 95% CI= 1.99 to 6.53; p<0.001). Thus, social cognitive theory can be used to explain and predict smoking cessation behavior.
Conclusion: Smoking cessation behavior increases with high self-efficacy, strong self-regulation, positive outcome expectations, and strengthening. Thus, social cognitive theory can be used to explain and predict smoking cessation behavior.

Keywords: social cognitive theory, smoking cessation, early adulthood.

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BACKGROUND

Globally, the prevalence of tobacco use with an age range of 15 years and above has indeed decreased by more than 30% from 32.7% in 2000 to 22.8% in 2020 (WHO, 2023). The percentage of smokers in Indonesia who are included in the age group ≥15 years in 2022 reached 33.81% (Putra et al.,

2023) WHO (2015) showed data on the prevalence of tobacco use among high school to college with an age range of 15-19 years old is 38.4% (August, 2019)

The decision to smoke made by an individual certainly involves several factors, including curiosity, positive emotional reactions felt when smoking, dependence, and social reasons such as friends, family, work, and other environments The individual is also a smoker (Heris, 2023; Sanggu & Wibowo, 2023; Suryawati & Gani, 2022).

It has become common knowledge that smoking behavior has a negative impact on several aspects of an individual's life, especially related to health, as recorded by WHO that tobacco use in Indonesia resulted in 225,720 deaths or about 14.7% of all deaths that often occur through cardiovascular diseases (CVDs) (WHO, 2018). According to WHO (2021) every year, as many as 8 million deaths occur in the world caused by tobacco (Fuziyyah et al., 2022).

In another study, it was said that pregnant women who actively smoke also have a 2.17x risk of giving birth to a low-birth weight baby compared to pregnant women who do not smoke (Arifian et al., 2020). Although it has been widely known about the adverse effects of smoking, in fact it is still difficult for individuals to stop smoking, this happens because of several things, such as dependence on cigarettes involves a complex mechanism in the brain with nicotine as the main trigger which the effect of increasing dopamine makes it difficult for active smokers to calm the mind without smoking and encourages non-stop use of cigarettes (Aftrinanto, 2021). Active smokers who have experienced dependence will experience withdrawal symptoms if they suddenly stop smoking activities (Fitri, 2022).

Some of the things that cause individuals to be unable to quit smoking include (1) personal and lifestyle factors, (2) nicotine dependence, (3) socio-cultural norms, (4) wrong perception that quitting smoking behavior will hurt themselves, and (5) failed smoking cessation assistance (Chean, 2019), (6) lack of social support from family (Pereira et al., 2020).

Several efforts can be made to stop smoking habits, one of which is by providing a better understanding of smoking behavior and its impact on individuals. Like smoking behavior, smoking cessation behavior is also influenced by several factors, including (1) cultural background, (2) education level, (3) socioeconomic level, (4) norms and motivation, (5) and support from the social environment (Sitinjak, 2018). According to the 2018 U.S. Centers for Disease Control and Prevention (CDS) Data report, only about 7.5% of adult smokers have successfully quit smoking out of 55.1% who said they have attempted to quit smoking in the past year and among students, the Global Youth Tobacci Survey (GYTS) shows that 80% of them want to quit smoking (Arlinta, 2023).

Social cognitive theory or social cognition theory is quite relevant to explain the phenomenon of smoking cessation behavior in individuals who have quit as active smokers in terms of the factors that affect it because it is able to explain how individuals develop and how their behavior is related to themselves and the influence they receive from their environment including providing an overview to understand, predict, and change individual behavior (Dimopoulou, 2016). Departing from the phenomenon found, the researcher has the desire to be able to explain the phenomenon of smoking cessation behavior in individuals who have quit smoking in the Semarang.

SUBJECTS AND METHOD

1. Study Design

The type of research used is quantitative research with a cross-sectional analytical observation method. This research was conducted in the Semarang City area, Central Java. This research was conducted in March-April 2024.

2. Population and Sample

The population of this study is active smokers and individuals who have quit smoking in the Semarang City area. The study sample was 205 individuals with details of 82 individuals who had quit smoking and 123 who were still active smokers. The sampling techniques are fixed disease sampling for individuals who are still actively smoking and snowball sampling for individuals who have quit smoking.

3. Study Variables

Dependent variables of smoking cessation behavior. The independent variables are expectation of results, self-efficacy, self-regulation, and reinforcement.

4. Operational Definition of Variables

cessation smoking behavior: decisions, actions, and behavioral changes taken by active smoking individuals to stop smoking behavior. Data were collected using a questionnaire in the form of a continuous scale.

Outcome expectation: the positive outcome that an individual expects for the chosen behavior, in this case the behavior of quitting smoking. Data was measured using a questionnaire with a continuous scale.

Self efficacy: an individual's belief in his or her ability not to smoke. Data was measured using a questionnaire with a continuous scale.

Self Regulation: the ability of individuals to control their behaviors, feelings, and thoughts to achieve goals, which in this case is not smoking. Data was measured using questionnaires. The scale used is a continuous scale.

Reinforcement: reciprocity of smoking cessation behavior that can strengthen the smoking cessation behavior itself both verbally and non-verbally. Data is measured through a questionnaire with a continuous scale.

5. Study Instruments

The research instrument used for data collection is using questionnaires.

6. Data analysis

Univariate analysis was carried out with the aim of determining the frequency distribution and percentage of each variable studied, namely smoking cessation behavior and social cognitive theory. The next analysis is bivariate carried out on each exogenous variable, namely social cognitive theory against endogenous variables, namely smoking cessation behavior., and Multivariate analysis using a pathway analysis model.

7. Research Ethics

Research ethics including informed consent, anonymity, and confidentiality, are handled with care throughout the research process. The approval letter for the research ethics permit was obtained from the Research Ethics Committee of Dr. Moewardi Hospital, Surakarta on March 26, 2024 with the number 831/III/HREC/-2024.

RESULTS

1. Sample Characteristics

Table 1 shows 84% participants are male, 67% had postgraduate study (magister), 55% were at age of 26-35 years old and 72% had low income.

Table 1. Frequency distribution of respondent characteristics (categorical data)

Characteristics	Category	Frequency (n)	Percentage (%)
Gender	Male	172	84
	Female	33	16
Age	17-25 years	86	42
	26-35 years	112	55
	>35 years	7	3
Level of education	Primary School	2	1
	Junior High School	3	1.5
	Senior High School	27	13.2
	Diploma 3	28	13.7
	Diploma 4/(college) S1	137	67
	Postgraduate (magister, S2)	8	3.6
Income	>minimum wage	58	72
	< minimum wage	147	28
Domicile district	Banyumanik	14	7
	Gajahmungkur	10	4.9
	Gayamsari	6	2.9
	Genuk	9	4.4
	Gunungpati	68	33
	Mijen	3	1.5
	Ngaliyan	9	4.4
	Pedurungan	11	5.4
	Semarang Barat	8	4
	Semarang Selatan	33	16
	Semarang Tengah	5	2.4
	Semarang Utara	7	3.4
	Tembalang	21	10.2
	Tugu	1	0.5

2. Bivariate analysis

Table 2 shows the analysis of the direct influence between the variables of outcome expectation, self-efficacy, self-regulation, and reinforcement with cessation smoking behavior.

a. Self-efficacy towards quitting smoking

Self-efficacy has a role in influencing the decision to quit smoking in participants. Participants with high self-efficacy were 21.02 times more likely to quit smoking compared to those with low self-efficacy (OR= 21.02; 95% CI= 7.94 to 55.61; p< 0.001).

b. Self-Regulation Against Smoking Cessation

Self-regulation directly influences the decision to quit smoking. Individuals with strong self-regulation were 3.36 times more likely to quit smoking than individuals with weak self-regulation (OR= 3.36; CI 95% = 1.82 to 6.18; p < 0.001).

c. Outcome Expectation for Smoking Cessation

The variable expectation of outcomes showed that individuals with more positive outcome expectations were 3.83 times more likely to quit smoking than individuals with negative outcome expectations (OR= 3.83; CI 95% = 2.05 to 7.16; p < 0.001).

d. Reinforcement against smoking cessation

Smokers who receive reinforcement to quit smoking will have a greater likelihood of quitting. This study shown that the individual's likelihood of stopping smoking behavior was at a score of 0.94, so it can be

interpreted as reducing the individual's likelihood of quitting smoking by 0.94 times (OR= 0.94; 95% CI = 0.53 to 1.70; p= 0.859).

Table 2. Results of bivariate analysis of the relationship between self-efficacy, self-regulation, success expectations, and strengthening smoking cessation

Independent Variables	OR	95% CI		p
		Lower Limit	Upper Limit	
Self-Efficacy	21.02	7.94	55.61	<0.001
Self-Regulation	3.36	1.82	6.18	<0.001
Outcome Expectation	3.83	2.05	7.16	<0.001
Reinforcement	0.94	0.53	1.70	0.859

3. Path analysis

a. Self-efficaacy towards quitting smoking

Table 3 shows the direct effect of self-efficacy on smoking cessation. Smokers who had high self-efficacy were 20 times more likely to quit smoking than those with low self-efficacy (OR= 19.99; 95% CI= 7.46 to 53.62; p <0.001).

b. Expectation of Results Through Self-Efficacy on Smoking Cessation

Smokers with positive outcome expectations had greater self-efficacy to quit smoking (OR= 8.64; CI 95%= 4.52 to 16.52; p<0.001).

c. Self-Regulation Against Smoking Cessation

The data shows that the decision to quit smoking is directly influenced by self-regulation. Smokers with strong self-regulation were 3.05 times more likely to quit smoking than those with weak self-regulation (OR= 3.05; CI 95%= 1.51 to 6.13; p= 0.002).

d. Strengthening through self-regulation on smoking cessation

Self-regulation is affected by reinforcement. Smokers who received reinforcement were more likely to self-regulate than those without reinforcement (OR = 3.61; CI 95%= 1.99 to 6.53; p <0.001).

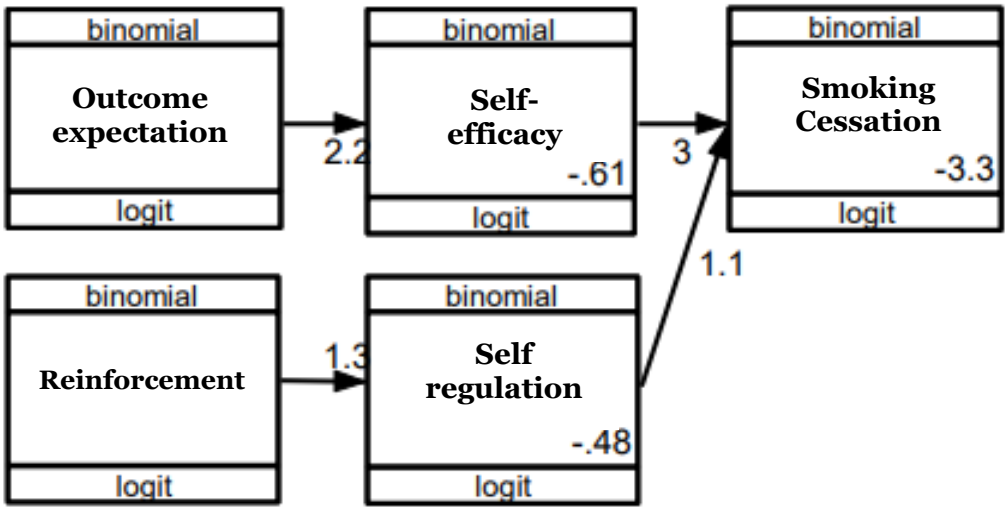

Figure 1. Model of analysis of the path of influence of cognitive theory on smoking cessation behavior

Table 4. Results of analysis of the influence of social cognitive theory on smoking cessation behavior

Dependent variable		Independent variable	b	CI 95%		p
				Lower Limit	Upper Limit	
Direct Effect	←	Self-Efficacy	19.99	7.46	53.62	<0.001
Quit smoking	←	Self-Regulation	3.05	1.51	6.13	0.002
Indirect Effect						
Self-Efficacy	←	8.64	4.52	16.52	<0.001	8.64
Self-Regulation	←	3.61	1.99	6.53	<0.001	3.61

DISCUSSION

The decision to quit smoking is also influenced by the self-efficacy that exists in the individual. The results of this study show that every 1 unit increase in self-efficacy score will be followed by an increase in smoking cessation score of 19.99 units (OR= 19.99; 95%CI= 7.46 to 53.62; p <0.001). It can be concluded that individuals with good self-efficacy have the ability to maintain themselves from smoking in the future.

In line with research conducted by Wang et al. (2021) which stated that individuals with high self-regulation related to smoking cessation behavior have the determination not to smoke tomorrow and if an individual smokes today, it will increase the likelihood of an individual smoking the next day (Wang et al., 2021).

A similar study conducted by Melizza (2020), on adolescents with a cross-sectional form of srudi, showed that adolescents with high self-efficacy increased their motivation to make the decision to quit smoking.

Self-regulation directly has an impact on the decision to quit smoking. This is shown by the increase in smoking cessation score by 3.05 units (OR = 3.05; 95% CI= 1.51 to 6.13; p= 0.002) for every increase of 1 self-regulation score. It can be concluded that individuals with strong self-regulation are 3.05 times more likely to quit smoking than individuals with weak self-regulation.

The results of this study are in line with research conducted by Baker et al., (2019) which showed that self-regulation can predict healthy behaviors and health outcomes in adolescents, which if self-regulation is good enough or strong enough, it will reduce the likelihood of smoking activities (Baker, 2019).

Another study that also supports the researcher's findings is the one conducted by Lin et al. (2018) which states that individuals with low self-regulation are strongly related to smoking behavior (Yu et al., 2019).

Through self-efficacy, the expectation of results influences the decision to quit smoking in individuals. Every 1-unit increase in the outcome expectation score will be followed by an increase in the smoking cessation score by 8.64 units (OR= 8.64; CI 95%= 4.52 to 16.52; p<0.001). From these results, it can be interpreted that there is a positive influence on the decision to expect results through self-efficacy on the decision to quit smoking in individuals.

This finding is in line with Alanazi et al., (2022) on Saudi women who are active smokers. Research with this cross-sectional method shows that outcome expectancies or expectation of results through self-efficacy is related to the desire to quit smoking (Alanazi et al., 2022).

In the reinforcement variable, it shows that through self-regulation also contributes to smoking cessation decision-making, where every increase of 1 unit of reinforcement score will be followed by an increase in smoking cessation score of 3.61 units (OR= 3.61; 95% CI= 1.99 to 6.53; p <0.001). Based on these results, it can be seen that positive strengthening has an impact on the decision to quit smoking through self-regulation variables.

This result is supported by research conducted by Lopez (2022) whose results show that providing short training on self-regulation in relation to eating activities can help reduce cigarette consumption in individuals.

AUTHOR CONTRIBUTION

All authors have made significant contributions to data analysis as well as preparing the final manuscript.

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This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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