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Comparison of the Level of Smoking Dependence on Psychological Aspects Among Technical Students

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Abstract

This study compared the psychological effects of low, medium and high smoking dependence among technical students. The psychological aspects tested were irrational beliefs, stress and willingness to quit smoking. This survey study involved 100 participants aged 18 to 25 from technical institutions in Perak, Malaysia. The Glover-Nilson Smoking Behavior Questionnaire (GN-SBQ) was used to assess smoking dependence. The Smoking Rationalization Scale (SRS) was used to assess smokers' irrational beliefs, the Perceived Stress Scale (PSS) was used to assess stress, and the University of Rhode Island Change Assessment Scale (URICA) was used to assess willingness to quit smoking. Using the Statistical Package for the Social Sciences (SPSS), data were analyzed using cross-tabulation and MANOVA to determine descriptive and inferential findings. The study's findings show a significant difference between low, moderate and high levels of smoking dependence in terms of irrational beliefs, stress, and willingness to quit smoking. The study's results also show that high and moderate smoking dependence smokers have a relationship with high levels of irrational beliefs, high stress and low willingness to quit smoking. These findings suggest smokers should be exposed to intervention and treatment programs to reduce smoking habits among technical students.

Keywords: *Smoking Dependence, Irrational Beliefs, Stress, Willingness to Quit Smoking, Technical Students.*

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INTRODUCTION

According to the World Health Organization (WHO) (2019), smoking poses health risks and claims nearly eight million lives annually. There were reported to be nearly 2 billion smokers worldwide in 2019. In Malaysia, the Ministry of Health Malaysia (2017) classified adolescent smokers aged 13 to 18 as part of the National Health & Morbidity Survey (NHMS), with an expected population of 342,210 people. Note that smokers aged 19 to 24 account for 726 574 people, those aged 25 to 29 account for 737 504 people, and those aged 30 to 34 account for 718,979 people. Teenage male smokers accounted for 25.3% of the total smoking population in Malaysia, while teenage female smokers accounted for 6.7%. According to WHO (2019), a smoker will average, lose 15 years of life. Furthermore, smoking is responsible for nearly 5.4 million deaths worldwide each year, or one person every six seconds. In Malaysia, the deaths caused by smoking were 15% to 20% for men and 5% to 10% for women in 2010 (Helmy in Berita Harian Online. 2018. April 12).

Previous research has demonstrated that smoking habits begin at a young age. According to WHO (2019), at least one in ten adolescents aged 13 to 15 worldwide are smokers. Most early smokers enroll in school between the ages of 11 and 12 (Grapatsas et al., 2017; Yingst et al., 2021). A young smoker will develop dependence and addiction as an adult if this situation persists (Lim et al., 2017; Handrianto et al., 2021). According to several previous studies, one of the factors that initiate smoking is the influence of peers (Yahaya et al., 2018; Ball et al., 2018; Cambron et al., 2017; Kim & Chun, 2018), the influence of smoking family members (Hiemstra et al., 2015), the ease with which cigarette products can be found anywhere (Patricia-Folan et al., 2017) and the risky environment of educational institutions (Lim et al., 2017; Grapatsas et al., 2017; Leatherdale, Brown, Cameron & McDonald, 2005). Besides that, in Lim et al. (2017) and Yahaya et al. (2018), adolescents have ample time to study and socialize with friends at school. Although the school environment is deemed safe, friends' influence at school is so strong that it is easy to be influenced by other students' smoking behavior.

Several studies have found that the number of smokers among vocational and technical students is significantly higher than among students in other types of schools (Robert et al., 2018; Atorkey et al., 2020; Wang et al., 2016; Van-Houtte & Van-Maele, 2012). Aho et al. (2019), smokers among technical students have a large social support group and are more likely to engage in antisocial behaviors like bullying. Moreover, this study found that the bullied students were likelier to be smokers than the students who bullied them (Matt et al., 2022). Hwang et al. (2014) found that many students smoked and imbibed together in the technical field. Also, heavy smokers tend to be alcoholics as well. Students who are under a lot of stress may experience this. Marsiana et al. (2019), Aho et al. (2019), and Atorkey et al. (2020) reported that smokers are less likely to be aware of the risks associated with smoking that can result in dependence and addiction. The continued reinforcement of smoking behavior is due to the lack of information regarding quitting smoking and its negative effects on health. Some prior researchers have hypothesized that differences in smoking habits between technical and academic students are attributable to the two groups' different levels of education (Wang et al., 2016; Robert et al., 2018; Andersen et al., 2015). Students with lower academic achievement are more likely to engage in smoking behavior, indicating a significant relationship between academic achievement and smoking. In contrast to the higher-achieving students who will be guided into fields like science, social science, teaching, religion, and others, the lower-achieving students will be steered more toward vocational and technical education. On the other hand, a lack of sensitivity to psychological and motivational factors significantly influences the smoking behavior of technical students (Xu & Chen, 2016; Ramadhani et al., 2022). The effects of stress and lack of self-motivation are among the causes of increased smoking behavior and decreased motivation to quit.

It is evident from several previous studies that smoking habits among technical students require careful consideration. Despite the widespread perception that technical education is of inferior quality, skills education benefits the nation's educational system and economic development (Ibrahim et al., 2021). In line with Malaysia, 86 percent of technical and vocational graduates will be employable in

2020 (Ministry of Higher Education, 2021). In 2020, there will be 78 655 graduates, and most of these technical and vocational grads will work as entrepreneurs, public servants, or in the industrial sector. Since it has its potential, technical education is not a low-class education.

For this reason, the study's overarching goal is to provide a snapshot of students' smoking habits in the technical field. There is a correlation between psychological factors like irrational beliefs, stress, motivation to quit smoking, and the level of smoking dependence used to quantify smoking behavior. The study's ultimate goal is to quantify the trend of psychological factors by gauging the prevalence of light, moderate, and heavy smoking dependence among technical students.

RESEARCH METHODS

This survey was carried out to compare the psychological aspects of smokers with low, medium, and high smoking dependence among technical students. Irrational beliefs, stress, and willingness to quit smoking are among the psychological factors assessed.

Sample and study location

The research subjects involved are technical students aged between 18 and 25. All study subjects were male smokers. The selection of subjects for this study is based on the characteristics of late-phase adolescence. Erikson (1994) states that the late phase of adolescence is a phase of change towards the adult world, which involves the process of maturity in relationships, making decisions, and framing the future. In addition, these late teens are chosen because they meet the characteristics of maturity in thinking, emotions, and behavior (Kinghorn, 2018; Exner-Cortens, 2014). Lim et al. (2017) discovered that adolescence, particularly those aged 17 and up, have the potential to purchase cigarettes in stores. Furthermore, adolescence who frequently purchase cigarettes at the store has the potential to purchase cigarettes illegally without restrictions from sellers.

This research was conducted at a skills education institution in Ipoh, Perak. Because it is an institution that teaches technical fields in general, the location of this study is deemed relevant. Welding, electrical, mechanical CAD, metal fabrication, foundry, refrigeration, and industrial mechanics are among the technical fields available at this institution. According to the institution's report, smoking accounts for up to 36% of the 546 students. As a result, the study subject's characteristics and location meet this study's objectives.

Measures

The Glover-Nilson Smoking Behavior Questionnaire (GN-SBQ) is used to determine the level of smoking dependence. This test was developed by Glover et al. (2005) to evaluate a person's behavior pattern toward dependence on cigarettes. GN-SBQ has 11 items with Likert scale scoring (0= strongly disagree, 1= disagree, 2= moderately agree, 3= agree, and 4= strongly agree). The validity of this test is .954, while the reliability value is Cronbach's alpha .845.

In addition, the Smoking Rationalization Scale (SRS) was developed by Huang et al. (2020) and aimed to identify irrational beliefs among smokers. This scale is used to identify the level of irrational beliefs of smokers so that the therapy process can be implemented for smokers to stop smoking. This SRS has 26 question items with a Likert scale (1=strongly disagree, 2=disagree, 3 moderately agree, 4=agree, and 5=strongly agree). SRS has undergone a validity test of .981, while the reliability is Cronbach's alpha of .748.

The Perceived Stress Scale (PSS) was used to assess smokers' stress levels. According to Cohen et al. (1983), stress is the degree to which a person perceives or evaluates their ability to overcome it. The PSS is intended to assess how unpredictable, uncontrollable, and stressful respondents' lives are (Rahman et al., 2022). The PSS contains ten items in total and is graded on a 5-point Likert scale (0=never, 1=rarely, 2=occasionally, 3=frequently, 4:very frequently). PSS has a validity test of .962 and a reliability test of Cronbach's alpha. 838.

Furthermore, DiClemente and Prochaska (1982) developed the University of Rhode Island Change Assessment Scale (URICA) to identify motivation and readiness for treatment using the Transtheoretical Model. McConnaughy et al. (1983) reduced the original 125 items to 32 and translated them into pre-contemplation, contemplation, action, and retention dimensions. This test is widely used to assess willingness to abstain from substances such as drugs, alcohol, and cigarettes (Handrianto et al., 2020; Sarte et al., 2021). Understanding the change process is critical for determining the influence that increases motivation, abstinence, retention, and cessation of any substance abuse (DiClemente & Hughes, 1990). This URICA test tool has a validity of .879 and reliability of .854, according to Cronbach's alpha.

Data analysis

Data analysis was done using the Statistical Package for the Social Sciences (SPSS) software. Descriptive data findings are explained through cross-tabulation analysis to see the background data of the study and the comparison of the level of dependence on smoking against the aspects of irrational beliefs, stress, and willingness to quit smoking. In addition, multivariate test analysis was performed to evaluate the comparison between variables inferentially.

RESEARCH RESULTS

Descriptive Analysis Findings

Table 1: Distribution of study subjects based on the level of smoking dependence on race, department of study, method of smoking, years of smoking, and the status of family members who smoke

Variables		**Dependency Level (N)**			**Total (N)**
		Low	**Moderate**	**High**	
Race	Malay	23 (27.4%)	31 (36.9%)	30 (35.7%)	84 (84.0%)
	Indian	7 (63.6%)	2 (18.2%)	2 (18.2%)	11 (11.0%)
	Native people	4 (80.0%)	0 (0%)	1 (20.0%)	5 (5.0%)
	Total	34	33	33	100
Department	Electrical & Electronics	13 (32.5%)	14 (35.0%)	13 (32.5%)	40 (40.0%)
	Manufacturing	21 (46.7%)	13 (28.9%)	11 (24.4%)	45 (45.0%)
	Production	0 (0.%)	6 (40.0%)	9 (60.0%)	15 (15.0%)
	Total	34	33	33	100
Method of Smoking	Conventional cigarettes (sticks)	17 (27.0%)	22 (34.9%)	24 (38.15)	63 (63.0%)
	Conventional cigarettes and vape	14 (43.8%)	11 (34.4%)	7 (21.9%)	32 (32.0%)
	Conventional cigarettes, vape, shisha, etc	3 (60.0%)	0 (0.%)	2 (40.0%)	5 (5.0%)
	Total	34	33	33	100
Years of Smoking	1 to 5 years	25 (43.1%)	27 (46.6%)	6 (10.3%)	58 (58.0%)
	6 years and above	9 (21.4%)	6 (14.3%)	27 (64.3%)	42 (42.0%)
	Total	34	33	33	100
Family Members who Smoke	Yes	27 (31.0%)	30 (34.5%)	30 (34.5%)	87 (87.0%)
	No	7 (53.8%)	3 (23.1%)	3 (23.1%)	13 (13.0%)
	Total	34	33	33	100

Description: (.%)- Percentage

Table 1 shows the distribution of study subjects based on the level of smoking dependence based on race, department of study, method of smoking, years of smoking, and the status of family members who smoke. The number of research subjects involved is as many as 100 people. Smokers with low smoking dependence are 34 people, moderate 33 people, and high 33 people. Smokers among Malay students are 84 people (84%), Indians 11 people (11%), and Native people 5 people (5%). Regarding the involvement of research subjects by the department of study, students from the Manufacturing Department are the most represented by 45 people (45%), followed by the Electrical and Electronics Department by 40 people (40%) and the Production Department by 15 people (15%). As for the method of smoking, conventional smokers recorded the largest number of 63 people (63%), the use of

conventional cigarettes and vaping was 32 people (32%), and the use of various types of methods was 5 people (5%).

Of these, 38.1% and 34.4% of conventional smokers reported high and moderate levels of smoking dependence. This indicates that conventional smoking methods are still preferred by adolescents today. Next, 58 people (58%) have smoked for 1 to 6 years, while 42 people (42%) have smoked for 6 years or longer. Among this group, 64.3% of those with a high level of smoking dependence report having smoked for six years or longer, compared to 46.6% and 43.0% of those with moderate and low levels of dependence. In addition, 87 people (87%) indicated that their family members smoke. Table 2 compares the level of smoking dependence among technical students based on their irrational beliefs, stress levels, and willingness to quit smoking.

Table 2: Comparison of low, moderate, and high levels of smoking dependence on irrational beliefs, stress, and willingness to quit smoking among technical students.

Variables		**Dependency Level (N)**			**Total (N)**
		Low	**Moderate**	**High**	**Low**
Irrational Beliefs	Low	4 (100%)	0 (0.0%)	0 (0.0%)	4 (4.0%)
	Moderate	30 (58.8%)	11 (21.6%)	10 (19.6%)	51 (51.0%)
	High	0 (0.0%)	22 (48.9%)	23 (51.1%)	45 (45.0%)
	Total	34	33	33	100
Stress	Low	19 (95.0%)	1 (5.0%)	0 (0.0%)	20 (20.0%)
	Moderate	14 (22.2%)	27 (42.9%)	22 (34.9%)	63 (63.0%)
	High	1 (5.9%)	5 (29.4%)	11 (64.7%)	17 (17.0%)
	Total	34	33	33	100
Willingness to Quit Smoking	Precontemplation	1 (2.1%)	21 (44.7%)	25 (53.2%)	47 (47.0%)
	Contemplation	24 (54.5%)	12 (27.3%)	8 (18.2%)	44 (44.0%)
	Action	9 (100.0%)	0 (0.%)	0 (0.0%)	9 (9.0%)
	Total	34	33	33	100

Description: (.%)- Percentage

Table 2 compares technical students with low, moderate, and high levels of smoking dependence on irrational beliefs, stress, and willingness to quit smoking. In terms of irrational beliefs, smokers generally have a moderate level of irrational beliefs, which is 51%, followed by a high level of 45% and a low level of 4%. Furthermore, smokers with a high level of dependence, 51.1%, followed by smokers with a moderate level of dependence, 48.9%, have the highest level of irrational beliefs. Furthermore, smokers with low smoking dependency have a

moderate irrational belief of 58.8%. As a result, smokers have irrational beliefs that reinforce their cigarette dependence.

Regarding stress, smokers reported a moderate stress level, accounting for 63% of all study subjects. In general, smokers with moderate smoking dependence account for 42.9% of moderate stress levels. The high-stress level is dominated by smokers, with a high smoking dependency of 64.7%. As a result, a smoker's stress level influences a person's smoking addiction. Furthermore, in the level of not intending to quit, smokers with high smoking dependence dominate as much as 53.2% compared to smokers with moderate dependence, which is 44.7%. In comparison, smokers with low smoking dependence are only 2.1%. Only smokers with a low smoking dependency represent the level of action. As a result, the study's findings indicate that level of smoking dependence influences willingness to quit.

Findings of Multivariate Analysis

Table 3: Summary of MANOVA analysis looking at the effect of smoking dependence level on irrational beliefs, stress, and willingness to quit smoking among technical students

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Between Groups	Irrational Beliefs	25.776	2	12.888	154.879	.000
	Stress	4.606	2	2.303	21.656	.000
	Willingness to Quit Smoking	140.026	2	70.013	109.473	.000
Total Repaired	Irrational Beliefs	8.072	97	.083		
	Stress	10.315	97	.106		
	Willingness to Quit Smoking	62.036	97	.640		

a. R Squared = .762 (Adjusted R Squared = .757)
b. R Squared = .309 (Adjusted R Squared = .294)
c. R Squared = .693 (Adjusted R Squared = .687)

MANOVA test analysis was performed on the variables as a whole; there was a significant difference between the level of smoking dependence and irrational beliefs [$F(2,97)= 154.88$, $p<.05$], stress [$F(2,97)= 21.66$, $p <.05$] and willingness to quit smoking [$F(2,97)= 109.47$, $p<.05$]. These results show that smoking dependence can affect irrational beliefs, stress, and willingness to quit smoking. The R^2 value shows that irrational beliefs can contribute as much as .76 or 76% to smoking dependence, while stress contributes .31 or 31%, and willingness to quit smoking contributes .69 or 69%. Since there is a significant difference in the variables, the Post Hoc-Tukey test was performed, and the results can be explained in table 4:

Table 4: Summary of Post Hoc- Tukey analysis of dependent variable mean differences with low, moderate, and high levels of smoking dependence among technical students.

Variable	(I) Dependence	(J) Dependence	Mean Difference (I-J)	Sig.
Irrational Beliefs	High	Moderate	.1072	.291
	Moderate	Low	1.0142	.000
	Low	High	-1.1214*	.000
Stress	High	Moderate	.1152	.327
	Moderate	Low	.3846*	.000
	Low	High	-.4997*	.000
Willingness to Quit Smoking	High	Moderate	-.4356	.074
	Moderate	Low	-2.2521*	.000
	Low	High	2.6877*	.000

*k <. 05 (significant at the 95% level)

Table 4 shows a significant difference between moderate and low levels of smoking dependence and low and high levels of smoking dependence, but no significant difference between high and moderate levels of smoking dependence for the variable of irrational beliefs. Concerning stress, the results show a significant difference between moderate and low levels of smoking dependence and low and high levels of dependence, but not between high and moderate levels of dependence. Similarly, there is a significant difference between moderate and low levels of smoking dependence and low and high levels of smoking dependence, but no significant difference between high and medium levels of smoking dependence.

DISCUSSION

In general, the study's findings show a significant difference in the level of low smoking dependence compared to moderate and high smoking dependence for all variables, including irrational beliefs, stress, and willingness to quit smoking among technical students. For all variables, no significant differences were found between moderate and high levels of smoking dependence.

Smokers with moderate and high levels of smoking dependence had high levels of irrational beliefs, whereas smokers with low levels of smoking dependence had moderate levels. This demonstrates how smokers' irrational beliefs reinforce their behavior and influence their level of dependence. This is consistent with Bishop's (2019) viewpoint, which explains the failure of individuals who use drugs, alcohol, or cigarettes due to irrational beliefs. In the case of substance abuse, irrational beliefs are the primary cause of emotional and behavioral maladjustment.

This viewpoint is supported by Ellis (1985), who explains that a person's ability to function well or poorly is determined by what they believe. A person is bothered by a set of irrational beliefs that underpin her. According to Ellis (2001), the fundamental principle of emotional disturbance is largely the result of irrational and self-defeating thinking. On the other hand, smokers exhibit several

forms of irrational mental processes, such as cognitive process regression (Vajravelu et al., 2015), cognitive dissonance (Orcullo & Teo, 2016), normalizing beliefs to maintain behavior (Mantler, 2013), self-defensive (Iles et al., 2019), and implicit trust (Ren et al., 2019). As a result, smoking behavior is difficult to stop and even affects other psychological problems. According to Huang (2020), most smokers find it difficult to quit smoking because they frequently rationalize the belief that smoking is not a negative act. Smokers frequently use smoking as an excuse to deal with stress, fill their free time, blame the government for selling, believe that smoking has no effect on health, and believe that quitting smoking has negative consequences. As a result, in general, smokers among technical students exhibit a trend of highly irrational beliefs, which ultimately lead to smoking addiction.

According to research, smokers who experience stress have a greater tendency to become dependent to smoking. Technical students who smoke typically have a moderate level of stress. Smokers with high levels of smoking dependence are perceived as more dominant than others when measuring high levels of stress. This demonstrates how a person's dependence on smoking is impacted by their higher levels of stress. When studying, technical students are observed to use both physical and mental resources. Physical training is used by technical students more than academic learning. High levels of stress can be caused by stressful physical conditions (Soon-Woo, 2014; Sicam et al., 2021). More dangerously, a stressful situation can lead to an increase in the number of cigarettes consumed each day, as well as a tendency to consume alcohol at the same time. Learning stress causes smokers to maintain their cigarette dependence and increases the rate of nicotine addiction in themselves (Elsalem et al., 2020; Clendennen et al., 2021; Pernantah et al., 2022). As a result, failure to manage stress among smokers is cited as a barrier to quitting (Kim et al., 2019; Skov-Ettrup et al., 2017).

Furthermore, the study's findings show that technical students are willing to quit smoking at pre-contemplation and contemplation levels. Smokers with high and moderate smoking dependence have little or no action of quitting. At the action level, smokers with a low smoking dependence are more dominant. DiClemente et al. (2004) examine two aspects of smokers' willingness to quit smoking. The degree of behavioral change determines the willingness to quit smoking. In this case, willingness to quit smoking is measured by the smoker's willingness to change from one level to another. Second, willingness to quit smoking refers to a person's openness and willingness to undergo treatment, including the cost and impact of withdrawal symptoms during the intervention. Additionally, the willingness to stop smoking indicates that smokers are motivated to seek resources to assist them in quitting. According to Prochaska et al. (2008), smokers cannot recognize that their behaviors need to change or are not prepared to switch from negative to positive behaviors during the non-action phase. When a smoker begins to consider the advantages of quitting, the action phase begins.

In general, the level of smoking dependence can be explained by psychological factors such as irrational beliefs, stress, and willingness to quit smoking. The level of smoking dependence can affect not only the frequency of cigarettes consumed but also other aspects of life. Nonetheless, smokers in the categories of light smokers, social smokers, daily smokers, and heavy smokers face

the same health risks (Wolfe et al., 2014; WHO, 2019; Nengsih et al., 2022). Furthermore, if smokers do not begin to quit, the level of smoking dependence can rise over time due to cravings, automatic actions, and loss of control (Piper et al., 2008; Piasecki et al., 2010).

CONCLUSION

Smokers are more prevalent among technical students than academic students (Robert et al., 2018; Atorkey et al., 2020; Wang et al., 2016; Van Houtte & Van Maele, 2012). This is supported by the study's findings, which show that smoking dependence can be influenced by irrational beliefs, stress levels, and the willingness to quit smoking. A high level of irrational belief raises the level of dependence. The same is true for stress; more stressful situations increase dependency. Smoking addiction, irrational beliefs, and stress hurt one's willingness to quit smoking. Technical students should be exposed to various types of knowledge and treated immediately in this regard. If smokers seek treatment, their knowledge of managing their smoking addiction will improve, as will their willingness to quit smoking (Bashirian et al., 2020; Villanti et al., 2020). As a result, the government and schools can devise strategies such as counseling or pharmacological treatment to reduce smoking dependence among technical students.

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