

A Study of relationship between mental health and smoking among adolescences in Tanjong Malim District

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Abstract

The objective of this study was to determine the relationship between mental health and smoking among adolescents. The method used for this research was cross sectional design. The sample involved 120 secondary school students which aged 13 to 15 years old and were selected using convenience sampling. The instrument used were Problem Oriented Screening Instruments for Teenagers (POSIT) and Global Youth Tobacco Survey (GYTS). Pearson's Correlation analysis used to measure the objective. The result illustrated that there were significant relationship between mental health and smoking among adolescents. As conclusion, mental health was correlated with smoking. Thus, the future study needed to be conducted to identify the factors associated to it.

Keywords: Mental health, smoking, substance abuse, adolescents, Problem Oriented Screening Instruments for Teenagers (POSIT), Global Youth Tobacco Survey (GYTS)

Abstrak

Kajian ini bertujuan untuk menentukan hubungkait antara kesihatan mental dan merokok dalam kalangan remaja. Kajian ini dilaksanakan melalui kaedah kajian keratan rentas (cross sectional). Jumlah peserta yang terlibat dalam kajian ini ialah 120 pelajar yang berusia 13 hingga 15 tahun yang dipilih menggunakan kaedah pensampelan mudah. Soal selidik yang digunakan ialah Kajian Global Tembakau Remaja (GYTS). Kolerasi Pearson digunakan untuk menentukan hipotesis kajian ini. Dapatan kajian menunjukkan hubungkait antara kesihatan mental dan merokok. Kesimpulannya, kesihatan mental kolerasi dengan merokok. Walaubagaimanapun, kajian masih perlu dijalankan untuk menentukan faktor yang terlibat

Kata kunci: kesihatan mental, penyalahgunaan bahan, merokok, remaja, Problem Oriented Screening Instruments for Teenagers (POSIT), Global Youth Tobacco Survey (GYTS)

BACKGROUND STUDY

Mental health problems are the global concerns around the world including Malaysia. According to Malaysian Mental Healthcare Performance: Technical Report 2016, mental disorders estimated to be responsible for about 8.6% of total disability-adjusted life years (DALYs). The mental health problems can be occurred to all range of ages including adolescents. According to Ahmad and his colleagues (2015), Mental health issues among children and adolescents in Malaysia showed an increasing trend from 13.0% in 1996 to 19.4% and 20.0% in 2006 and 2011 respectively. A data reported by the Ministry of Health showed that prevalence of mental health problem among 16 to 19 years old was 34.7% while for aged 10 to 15 years old was 11.4% (Institute for Public Health, 2015).

Mental health issue among the adolescent are suggested to have relationship with prolong and unresolved mental health disorders that occurs since early child age. For example, study shows that there is an association between mental health problems during childhood and psychiatric disorders through adolescent and adulthood stage (Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A, 2003). Mental health problems such as depression can lead to smoking. This can be proven by a study conducted by Mathew *et. al* (2017) which reported that individual with depression are more likely to smoke more cigarettes per day.

RESEARCH QUESTION

What is the relationship between mental health and smoking among adolescents?

RESEARCH OBJECTIVES

To determine the relationship between mental health and smoking among adolescents

LITERATURE REVIEW

Mental health among adolescent

Mental health problems could impair the adolescents performance in school and increase the risk of truancy and next dropping out of the school (Schulte-Korne, 2016). There are many types of mental health problems such as depression, anxiety, mood disorder and schizophrenia. However in our study, we only focus on depression and anxiety as it is most common among adolescent. This was proven by a study conducted based on the DSM-5 criteria which involved 3615 of Austrian adolescents. The result found that the highest prevalence rates of mental health problems were anxiety disorder and depressive disorder which were 15.6% and 6.2% respectively (Wagner *et. al.*, 2017). However, the literature reviewed was not bounded to depression and anxiety only as the instrument measures mental health as general.

There were several studies that had been conducted on mental health specifically among adolescents. A study was carried out by Aharbi, Alsuhaibani, Almarshad and Alyahya (2019) which aim to estimate the prevalence of depression and anxiety among high school students at Qassim region, in Saudi Arabia. There were 1245 students involved in the study. The result obtained from the study was females were predominantly higher than males in all levels of depression. Females were also higher than males in all level of anxiety.

In addition, the slightly similar study conducted by Kumar and Akoijam (2017) which aim to determine the prevalence of depression, anxiety and stress among higher secondary school students in Manipur, India. The study consists of 863 respondents. The result of the study illustrated that the prevalence of depression, anxiety and stress were high among females and significant for anxiety and stress. The prevalence of depression and stress were also significantly higher among 12th standard students.

Besides that, Mohammadzadeh and his colleagues (2018) conducted a study on 287 orphanages adolescents were aimed to assess the prevalence of depression and anxiety. The results found that 85.2% of them had depressions while 80.1% had anxiety. The results also revealed that 23.7% and 30.3% of participants had severe depression and sever anxiety level.

Next, a study proposed by Ling and his colleagues (2018) aimed estimate the prevalence of depressive symptoms in adolescents in Kuching, Malaysia. The study involved about 320 adolescents which came from urban and rural secondary schools. The result portrayed that the prevalence of depressive symptoms was 26.2% in which the rural school students was higher than urban school students.

Another study conducted among adolescents in Malaysia which aim to determine relationship with depression, anxiety and stress. The study was conducted by Mohamad, Draman, Aris, Musa, Rus and Malik (2016). The result of the study stated that 75.6% of the respondent shave at least mild

depression and 88% of the respondents have at least mild anxiety. As conclusion, the mental health problem especially depression and anxiety are highly reported among the adolescent.

Smoking among adolescent

Smoking cigarettes are common over the world including Malaysia and most of the adult smokers started to smoke before the adult stages. This sentence was complement to Ghaderi and his colleagues (2016) which stated that cigarette smoking is a common problem among teenagers. According to Institute of Public Health (2015), it reported that more than 80% of adult smokers began to smoke before the age of 21 and males are more prone to be a smokers compared to females. This was nearly similar with the previous study conducted by Park (2011) which stated that approximately 90% of the people who smoke for the first time are adolescent who are younger than 18 years old.

Besides that, a study which aimed to determine the prevalence of smoking among adolescents in Iran found that 1.5% of participant had smoking onset in age of 12 years old. The result also showed that students at the age of 15 years old had the highest prevalence to begin the period smoking (Ghaderi et. al, 2016).

Furthermore, a study conducted by Gadalla et. al (2003) on the smoking which involved 635 students of 2 secondary schools in Qalyobia governorate. The result found that the prevalence of students who ever tried cigarette was 29% in which the average age to initiate smoking was at aged 11 years old. While, the percentage of students that currently smoking were 11.5%.

There were also studies that being conducted about tobacco used among Malaysia school adolescents. The current study was conducted in Kelantan, Malaysia which aim to investigate the prevalence of smoking among secondary school students (Lim, et. al., 2020). The result revealed that almost 2/3 of the current smoking started smoking before the age of 14 years old and ¼ of them were frequent smokers which meant they smoked for more than 20 days in a month.

In addition, a result from a study proposed by Lim and his colleagues (2018) found that the ratio of male to female current smokers was more than 10:1. The researchers also found out the surprising fact in which male school adolescents from urban areas were significantly less likely to purchase cigarettes compared to female smokers.

Other than that, there was a research conducted in Negeri Sembilan, Malaysia by Lee and his colleagues (2005). The aim of the study was to determine the prevalence of smoking among secondary schools. The study involved about 4500 adolescents in which the result illustrated that the prevalence of smoking was 14% and 37.8% of the students started smoking at the age of 13 to 14 years old.

Relationship between mental health and smoking among adolescent

There are many studies suggest on significant relationship between mental health, smoking and substance abuse among the adolescent. For instance, a study with aims to explore the relationship between depression and smoking across LMICs (low-and- middle-income countries) which was conducted by Stubbs, Vancampfort, Solmi, Siddiqi, Smith and Koyanagi (2018). This cross-sectional design study focus on community-based approach which consists of 242,952 people. Findings from this study suggest on significant association of depression type (including no depression, subsyndromal depression, brief depressive episode and depressive episodes) with smoking in which estimated by multivariable binary logistic regression.

On the other hand, Mikael, Irina, Mikko, Maria and Erkki (2018) also proposed a study to determine whether smoking independently predicts suicidal ideation, attempts (SAs) or modifies risk of SAs during major depressive episodes (MDEs). The result obtained from the study was in comparing with the non-smokers, heavy smokers suffered from significantly high severity of depression and more likely to have a comorbid alcohol use disorder and SAs.

METHODOLOGY

RESEARCH DESIGN

The research design that was chosen to examine the relationship between mental health, smoking and substance abuse among adolescents was cross-sectional method. The cross-sectional method was defined as taking a large group of participants of various ages at one time and testing them (Nestor & Schutt, 2015).

POPULATION AND SAMPLING

The population involved in this study was one of the secondary school in Tanjong Malim area. There were 120 respondents which aged 13 to 15 year old participated in this research. The adolescents were selected through convenient sampling. According to Shaughnessy, Zechmeister, and Zechmeister (2015), convenience sampling involves selecting respondents primarily on the basis of their availability and willingness to respond.

The sample size was obtained by using Krejcie and Morgan Table as shown in Table 3.1 (Krejcie & Morgan, 1970). Initially, the sample size was 108 respondents. However, the researcher managed to get 120 total of respondents.

The criteria for this research was set up in order to avoid any biased. The inclusion criteria in which enable the respondents to participate were the participant must be a student from School A which aged 13 to 15 years old. The respondent must be healthy physically and mentally. Other than that, the respondent must consented and able to understand Malay languages.

Table 3.1 Krejcie & Morgan Table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

PROCEDURE

The procedure started with the choosing the theories, planned a research to test the theories followed by reviewed the previous research articles that related to the study. Next, the questionnaires were chosen based on the variables involved in the study and being translated into Malay language using back translation. The back translation was carried out to check any grammar or technicalities issues regarding the questionnaires. In addition, the final checking regarding the word or the structure of sentences was examined by the peers and Psychology lecturer in order to avoid any inconsistencies or confusing statement of the questionnaires. Next, the demographic information sheets was prepared and attached to the questionnaires.

Besides that, the researcher also sought the ethics from UPSI Ethics Committees in order to minimize the risk and biased of the research. Other than that, the researcher asked approval from the school principal and the consent was asked from the parents. During the data collection, the respondents were briefly explained about the study including the voluntary participations of the study. The respondents were also free to ask any questions regarding the questionnaires and study that being conducted. The set of questionnaires were distributed to all of the respondents. The questionnaires took about 15 to 30 minutes and were collected once the respondent had done. After the data was collected, the researcher started to key in and analyse the data using Statistical Package for the Social Sciences (SPSS) software.

INSTRUMENTATION

The instruments involved were parallel to the variables involved in this study which were mental health, smoking and substance abuse. The measures involved were Global Youth Tobacco Survey (GYTS) (World Health Organization, 1999) and Problem Oriented Screening Instrument for Teenagers (POSIT) (National Institute on Drug Abuse, 1991) specifically mental health and substance abuse part.

The smoking level was measure by using Global Youth Tobacco Survey (GYTS). GYTS is a self-administered, school based survey of survey of students in grades associated with 13 to 15 years old which is to monitor youth tobacco use and tracking key tobacco control indicators. According to Reddy (2003), the GYTS has face and construct validity obtained from a pilot study which involved the Grade 8 learners in May 2002. The pilot study was conducted in five provinces which were the Western Cape, KwaZulu-Natal, Gauteng, Limpopo Province and Mpumalanga.

The mental health variable was measured by using POSIT which is a multidimensional tool intended to identify adolescents needing further assessment in a problem regarding substance abuse and nine other functional areas such as physical health, mental health and family relations. The POSIT are valid and reliable instrument. This can be proven by a study conducted by Kelly, O'Grady, Gryczynski, Mitchell, Kirk and Schwartz (2017) which examined the psychomeproperties of the POSIT. The study involved 524 adolescents aged from 12 to 17 years old. The instruments involved in the study were POSIT and items from a modified World Mental Health-Composite International Diagnostic Interview (WMHH-CIDI). Based on the result, the Cronbach alpha for the 26 instrument was 0.86 which showed the reliability of POSIT. The concurrent validity was determined using cutoff of either 1 or 2 responses. A cutoff of 1 yielded higher sensitivities and a cutoff of 2 yielded higher specificities.

DATA ANALYSIS

The descriptive statistics and inferential statistics were involved in this study. The descriptive was used to determine the frequency (*f*) and percentages (%) for the demographic information while the central tendency was involved for the variables involved which were mental health, substance abuse and smoking among adolescents.

Next was inferential analysis which was correlation. As the scores of the instruments were computed, the statistical analysis was run using SPSS software. The analysis was conducted to

determine the correlation between mental health, smoking and substance abuse by using Pearson's correlations in order to test out hypotheses.

The r value determined the significant of the variables. The null hypotheses had to be rejected in order to defined that there was a significant relationship between the variable. The null hypothesis was rejected if the $r \leq 0.05$.

Ethical considerations

There are few ethics that will be considerate along this study. Firstly, ethical approval will be sought from the Ethics committee from Universiti Pendidikan Sultan Idris (UPSI). Participants will be informed about the study, their rights in the study, privacy and confidentiality of survey data recorded and publications of findings. Participants are also allowed to withdraw at any time during the study without explanation and affecting their future treatment.

Each administered questionnaire data will be coded as anonymous without identify any particular participants, then the survey data will be kept in secure computer with encrypted password. Whereas, the informed consent form sheet and hard copy data such as the questionnaire and demography questionnaires that contain participant information will be kept in locked cabinet under Psychology and Counselling Department, University Pendidikan Sultan Idris. The data will be kept for 7 years duration before it termination. All of these information will be sought through patient information sheet that will be given to all potential respondents prior to inform consent to participate in the current study. Only once eligible participants confirm their understanding of the study, informed consent will be obtained from the participants prior to all interviews.

RESULT

Table 4.1 Demographic information of respondents

Demographic	Frequency (f)	Percentage (%)
Gender		
Male	68	56.7
Female	52	43.3
Age		
13 years old	36	30.0
14 years old	47	39.2
15 years old	37	30.8
Ethnicity		
Malay	120	100
Chinese	0	0
Indian	0	0
Others	0	0
Family Income		
Less than RM 3000	5	4.2
RM 3001 to RM 5000	23	19.2
RM 5001 to RM 10 000	72	60
More than RM 10 000	20	16.7

Based on descriptive analysis, table 4.1 illustrated the unequal total number of male and female which were 56.7% (n=120) and 43.3% (n=120) respectively. Among the 120 participants involved, 30% were 13 years old, 39.2% were 14 years old and 30.8% were 15 years old.

All of the students that participated in this study were Malay. Based on data collected, there were 4.2% of the participants had the lowest rate of family income while 16.7% of the participants had the highest rate of family income which were “Less than RM 3000” and “More than RM 10 000” respectively.

Table 4.2 Mean and standard deviation of mental health and smoking among adolescent.

Measures	M	SD
Mental health	5.92	4.16
Smoking	2.94	5.01

The table 4.2 showed the *M* and *SD* of the variable which were mental health, substance abuse and smoking among adolescents. The score for mental health among adolescents had a mean of 5.99 (*SD* = 4.16) with the minimum score of 0 and the maximum score was 16. Next, the substance abuse score and the smoking score had a mean of 1.29 (*SD* = 2.18) and 2.94 (*SD* = 5.02) respectively. The minimum score of substance abuse was 0 and the maximum score was 10 while for the smoking score, the minimum score was 0 and the maximum score was 22.

Table 4.3 Pearson Correlation between mental health and smoking

	Mental health scores	Smoking scores
Mental health scores	-	.224* .014
Smoking scores	.224* .014	-

Note: *. Correlation is significant at 0.05 level (2-tailed)

Based on the Pearson Correlation analysis, it showed that there was a significant relationship between mental health and smoking among adolescents ($r=.224$, $n=120$, $p=.014$). The direction of mental health and smoking was positively correlated.

DISCUSSION

The finding can be supported by the recent study proposed by Boateng-poku and his colleagues (2020) aim study on relationship between depressed mood and substance use. They found that higher level of depressed mood were positively associated with tobacco usage in which individuals who smoked more cigarettes per day had above average depressed mood. Other than, a result from a study among Korean adolescents found out that almost half of current dual users reported having depression which was 47.0% compared to nonusers which is 24.0% (Lee & Lee, 2019). The dual users in this study mean that the adolescents use the conventional cigarettes and e-cigarettes such as vape.

There were also study that opposed the hypothesis of this study in which they found the strong evidence to support a hypothesis that smoking could be risk factors for development of depression for both lifetime smoking and smoking initiation (Wootton et, al., 2019). This was parallel to a study by Milic and his colleagues (2020) which found that the proportion of depression among students who ever smoked was higher compared to students who never smoked. They also stated that smoking might be regarded as a symptom of mental health disorders and a marker of increased risk for depression

Other than that, there were also bidirectional between mental health and smoking. For instance, a study conducted by Canady and his colleagues (2019) which aim to study on causal effect of lifetime smoking on risk for depression. The result from the study found evidence that smoking increased risk of depression and also having depression increased smoking behaviour. In addition, there was a study conducted by Boden and his colleagues (2010) on the direction of depression and smoking. Based on his result, it found that unidirectional causal relationship between smoking and occurrence of depressive symptoms as well as that co-occurrence of smoking and depression cannot be explained by common genes and environment.

IMPLICATION OF THE RESEARCH

There were several implications from this research. First, as the research provided the data on mental health status of adolescents, it gave insight to the school managements in order to plan for the awareness campaign to make sure that the adolescents' mental health was at healthy and optimum level. Besides that, regarding the substance abuse and smoking data, it was useful for the counsellor in order to set up some strategies to minimize and control the use of illicit drug and cigarette among adolescents.

Next, the result from the research provided additional information for the psychologist and educational managements about the needs of intervention programs. The intervention programs might be useful in order to address the problem of mental health, smoking and substance abuse among adolescents. The research also provided new knowledge on the importance of mental health, as well as the awareness on the substance abuse and smoking among adolescents. Therefore, the data and the research as whole had contributed to provide additional informations which might be useful for the future researcher who intended to study on the similar topic by using different approach

In conclusion, the implications of study might benefits the community as it could help to raise awareness on the mental health, smoking and substance abuse. This was important in order to reduce the prevalence of mental health problems, smoking and substance abuse among adolescents especially in Tanjong Malim district.

LIMITATIONS

There were several limitations throughout the study. Firstly regarding the sample size of the research. The first limitation was regarding the sample size of the research. Even though, the sample size for the study had been calculated ($n=120$), the researcher found that it was insufficient in order to generalized the result for the adolescents of that particular school. This was because the sample size only covered the adolescents from the lower form which aged 13 to 15 years old. Furthermore, the questionnaires were distributed within the hall as the researcher applied convenience sampling. This lack of variations could negatively affect the obtained results.

Second limitation was regarding the interaction between researcher and respondents. Since the researcher was unfamiliar to the respondents, the researcher had difficulties to build rapport with the respondents. This might affects their responds of the survey conducted as the respondent might refuse to ask if they had any difficulties to understand certain item. Besides that, the researcher found that there was possibility of the adolescents to fake good of their responses since the instrument used in this study was a self-reported instrument.

Lastly, the setting during the survey conducted also might be one of the limitations. As the respondents were gathered in the hall, they might feel uncomfortable due to the arrangement to sit and weather. The respondents also might be insecure if their friend knew the answer as certain items were quite taboo for Malaysians. Thus, there might be some bias in answering the questions which might affect the result of the study.

RECOMMENDATIONS FOR FUTURE RESEARCH

Based on limitations of the research, there were several recommendations needed to be considered in order to get more accurate result. Firstly, a broader sample size should be considered to ensure that the result could be generalized to a wider population. The researcher would recommend the future research could apply random sampling instead of convenience sampling to minimize the bias in the research.

Besides that, it was helpful for the future researcher if they could meet and greet the potential respondents in order to build rapport with the respondents. This could help the respondents to be comfortable and openly speak out if they face any difficulties to understand certain items. It also advantaged the researcher as the possibilities of fake good responds could be minimized.

Lastly, the setting during the survey conducted should be controlled. This was because the controlled setting might be helpful for the respondents to answer the questionnaires more truthful as it provided minimal distraction. For instances, the researcher could give some space for the respondents to choose their favourable place to answer the questionnaires instead of set up the setting for them.

As conclusion, the study revealed that there was a positive correlation between mental health and smoking among adolescents. However, a deeper study should be conducted in order to identify the factors that might trigger the mental health and smoking habit among adolescents. The study added additional evidence for the government and professional to conduct an intervention program regarding mental health and smoking for adolescence.

CONCLUSION

The researcher aimed to investigate the relationship between mental health and smoking among adolescents. The hypotheses proposed by the researcher which was to determine the relationship between mental health and smoking. In order to gain more understanding regarding the topic, the researcher had reviewed several articles from the previous studies.

The method involved in this research was cross-sectional survey design in which the respondents were obtained through convenience sampling. There were 2 instruments used to measure the smoking and mental health which were Global Youth Tobacco Survey (GYTS) and Problem Oriented Screening Instrument for Teenagers (POSIT) focused on mental health domain. The back translation method was applied to the chosen instruments.

As for data analysis, the descriptive and inferential analysis had been conducted by using Statistical Package for the Social Sciences (SPSS) software. The descriptive analysis was run for the demographic information while, the inferential analysis involved the Pearson Correlation analysis to test the hypotheses. As a result, the null hypothesis was accepted for the hypotheses stated which means there was relationship between mental and smoking.

Besides that, the discussion regarding the result followed by implication, limitations and recommendations of the research also being discussed to give better understanding and improvement for the future research. To summarize, the mental health status affects the smoking level of adolescents.

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