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Relationship Between Physical Activity and Smoking Experience in Online Motorcycle Taxi Drivers in Surabaya

Amelia Lorensia[1*], Rivan Virlando Suryadinata[2], Dinar Pramesti Paramanandi[1]

Department of Clinical-Community Pharmacy, Faculty of Pharmacy, Universitas Surabaya, Surabaya, Indonesia[1]
Department of Public Health, Faculty of Medicine, Universitas Surabaya, Surabaya, Indonesia[2]

Corresponding Author: 1*

ABSTRACT— The smoking problem is a world health problem and online motorcycle taxi drivers have a smoking habit. Changes in the structure and function of lung tissue cause the flow of incoming oxygen to become less, resulting in shortness of breath in sufferers, causing breathing to become heavier and painful after activity. This study aimed to determine physical activity and smoking experience among online motorbike taxi drivers in Surabaya. The research design used was cross-sectional. This research was conducted in August-November 2020, in Rungkut District, Surabaya City. The research variable was level of physical activity (using International Physical Activity Questionnaire (IPAQ)) and smoking experience (using by the Brinkman Index) in smokers who work as online motorcycle taxi drivers. The total number of respondents was 49 people. In the Pearson correlation test, to determine the relationship between the severity of smoking and the physical activity level. It showed that there was a significant relationship between the severity of smoking and the level of physical activity, namely r= -0.659 and p=0.000. So the higher the severity of smoking, the lower the level of physical activity.

KEYWORDS: physical activity; smoker; online motorcycle taxi driver

1. Introduction

The city of Surabaya is the capital of East Java Province which is the second largest city in Indonesia after Jakarta, so it is used as a center for business, industry and trade where to support all activities carried out, fast-paced and practical technological advances are needed in the field of transportation facilities, namely in the form of online transportation services that can reach road conditions that are congested with vehicles [1]. Online transportation systems generally build partners with drivers [2]. The smoking phenomenon is very easy to find among public transport drivers. The vulnerability of this job to health problems is also great, one of which is caused by their unhealthy behavior, namely the habit of smoking [3]. Online motorcycle taxi drivers take advantage of their free time while waiting for their passengers by smoking cigarettes. This is reinforced by the results of an initial interview survey with one of the online motorcycle taxi drivers where the results of the survey found that online motorcycle taxi drivers have a smoking habit while waiting for passengers to ward off boredom while waiting for orders and avoid falling asleep [4- 6]. In UU No. 22 2009, it is mentioned that the driver of the vehicle must be conscious and not distracted because of tiredness, this situation can cause traffic accidents if forced to keep driving [7].

The smoking problem is a world health problem that is currently still difficult to deal with. WHO states that smoking causes nearly 6 million deaths per year [8]. Indonesia, as one of the world's largest market for smoking tobacco, is significantly affected by tobacco-related illness. The number of smokers in Indonesia

remains high and is expected to increase gradually every year. Smoking is responsible for a high proportion of morbidity and mortality in Indonesia [9]. Apart from that, Indonesia is also the 5th largest tobacco grower in the world [10]. Exposure to cigarette smoke can cause an inflammatory response in the peripheral airways and lung parenchyma. An increase in inflammatory mediators will result in oxidative stress which can disrupt the body's antioxidant defense mechanisms and result in damage or oxidation of lipids, proteins and DNA in cells [11], [12]. Most of the damage to cells does not occur directly, but is caused by Reactive Oxygen Species (ROS) produced such as superoxide radicals, hydroxyl radicals and hydrogen peroxide [13]. Inflammation that occurs in the airways will cause damage to bronchial cilia cells which results in hypersecretion of mucus resulting in narrowing of the airways. These pathological changes cause the lungs to lose elasticity and limit air flow [14].

Cigarette smoke is the main risk factor for chronic obstructive pulmonary disease (COPD), which is characterized by limited air flow in the lungs [15]. Changes in the structure and function of lung tissue cause the flow of incoming oxygen to become less, resulting in shortness of breath in sufferers. The carbon monoxide (CO) gas contained in cigarettes causes hemoglobin desaturation, reducing oxygen circulation throughout the body, causing breathing to become heavier and pain after activity. As a result, physical activity becomes hampered [16]. A person who experiences shortness of breath will become very inactive in daily life, this shows a decrease in activity intensity and an increase in sedentary behavior every day. So, with a decrease in the intensity of this activity, it can be said that respiratory problems that occur due to smoking can cause a decrease in a person's physical activity [17]. This is reinforced by the results of previous research by [18], who found in their research that smokers had less physical activity than non-smokers.

Cigarettes have an acute effect when carrying out sports activities, both in the form of daily physical activity and physical exercise. The acute or immediate effect of smoking on physical activity is characterized by a decrease in the ability to perform physical activity optimally because smokers have reduced aerobic endurance, are easily short of breath, accompanied by a decrease in physical performance in carrying out daily work/tasks and an increased risk of injury [17], [19]. Physical activity is defined as body movement by muscles and skeleton that requires energy expenditure [20]. Physical activity recommended for adults is physical activity including recreation to fill free time, walking or cycling, working, doing housework, playing and sports. Physical activity is done at least 150 minutes a week at moderate intensity and at least 75 minutes a week at high intensity or a combination of moderate and vigorous intensity activities. A high level of physical activity is associated with a good quality of life, both on the scale of the quality of physical health and the quality of mental health. Thus, decreased physical activity can cause worsening health conditions, quality of life and productivity [21], [22].

Regular physical activity will help improve health in people of all ages. Among them, it can help maintain healthy bones, muscles and joints, reduce weight, lower blood pressure, have an effect on reducing cholesterol, manage depression and anxiety [23]. Lack of physical activity is the fourth risk factor for death on a global scale. Prevalence of the population in Indonesia who are classified as lacking in physical activity is 33.5% and in East Java the prevalence of the population who is classified as lacking in physical activity is 26.5%. Measurement of physical activity can be measured using the IPAQ (International Physical Activity Questionnaire) questionnaire [24]. The IPAQ used was modified first because it was adapted to the conditions of the community, which in preliminary studies experienced difficulties in classifying their level of physical activity [25]. This study aimed to determine physical activity and smoking experience among online motorbike taxi drivers in Surabaya.

2. Method

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2.1 Research Design

The research design used was cross-sectional. Data collection is carried out all at once at one time. This research was conducted in August-November 2020. The research location was in the city of Surabaya. The research variable was level of physical activity and smoking experience in smokers who work as online motorcycle taxi drivers. Smokers are those who have consumed ≥100 cigarettes during their lifetime to date or respondents who smoke ≥1 cigarette per day [26]. Smoking severity was measured by the Brinkman Index, which was calculated by multiplying the duration of smoking (in years) by the number of cigarettes smoked per day. These smokers were systematically selected based on the smoking severity for representing mild smokers (<2 cigarettes/day), moderate smokers (>2 and <10 cigarettes/day) and severe smokers (>10 cigarettes/day) [27].

Physical activity was any body movement produced by skeletal muscles which requires energy to move [28]. Physical activity can be measured using International Physical Activity Questionnaire (IPAQ). Respondents will be interviewed to see the physical activity they have done in the last week, and will be grouped into 3 groups, namely Mild Physical Activity (<600 MET-minutes/week), Moderate Physical Activity (600-1500 MET- minutes/week), and Vigorous Physical Activity (>1500 MET- minutes/week) [29- 31]. The physical activity questionnaire uses the IPAQ questionnaire which has been translated from previous research studies by [29- 31]. The questionnaire has been tested for validity and reliability.

2.2 Population And Research Sample

The population in this study were smokers as online motorcycle taxi drivers operating in Rungkut District, Surabaya City. The sample in this study was part of the population that met the criteria: (a) Aged ≥ 17 years; (b) Have working hours of 6-8 hours; (c) Male gender (highest smoking prevalence in men) [24]; (d) Willing to be the object of research and fill out informed consent; (e) Has no history of illness or is currently suffering from asthma, COPD, respiratory tract infections. The sample size formula used is the Lemeshow formula because the population size is unknown. So the sample size (n) in this study was 49 people. Collecting respondents used purposive and accidental sampling methods.

2.3 Research Subject Collection Method

The research subjects were collected by posting announcements on social media and meeting them at base points where many online motorcycle taxi drivers usually wait for potential passengers (such as: malls, terminals, stations, etc). Each potential respondent will be given informed consent as proof of agreement to take part in the research. Researchers will explain the aims and benefits of this research. Information obtained from research subjects will not be disseminated other than for research purposes and the identity of the respondent will only be known by the researcher.

Respondents who have stated that they are willing to take part in this research and be interviewed to find out what physical activity they did during the week. Then the researcher will classify these activities based on the IPAQ formula.

Mild MET-minutes/week = 3.3 x minutes x day
Moderate MET-minutes/week = 4.0 x minutes x days
Vigorous MET-minutes/week = 8.0 x minutes x days

Total physical activity MET-minutes/week = sum of Mild + Moderate + Vigorous MET-minutes/week scores. After the total physical activity score is obtained, the total score in METs (Metabolic equivalent of task) is categorized based on mild (<600 METs), moderate (600-1500 METs), or vigorous (>1500 METs) physical activity categories.

2.4 Data Analysis Method

The data scale for the severity of smoking and physical activity is the ratio. Analysis of the relationship between smoking severity and physical activity using the correlation test. To indicate statistical significance, the *p* value to 0.05.

3. Result

In this research, 70 potential samples were obtained, who were then contacted one by one until finally a sample of 49 people were obtained who were willing to take part in this research and had filled out informed consent.

3.1 Description of Respondent Characteristics

The total number of respondents who were willing to participate in this research was 49 people. All respondents in this study were male (100%), with an average age of 36 years. The youngest age was 21 years and the oldest age was 46 years (Table 1). The majority of respondents had a married marital status, namely 33 people (67.35%). Most of the respondents in this study did not have comorbidities, namely 47 people (95.92%), and there were 2 people who had a history of dyspepsia (4.08%). Apart from that, the majority of respondents did not consume drugs/supplements/vitamins, 95.92%.

Table 1. Frequency Distribution of Respondents Characteristics

Respondent Characteristics		Frequency (n=49)	Percentage (%)
Age (years)	17-25	10	20.41
	26-35	15	30.61
	36-45	19	38.78
	45-55	5	10.20
Marital status	Married	33	67.35
	Not married yet	16	32.65
Comorbidities	None	47	95.92
	Dyspepsia	2	4.08
Take medication	None	47	95.92
	Supplements / vitamin	2	4.08

3.2 Respondent's Smoking Experience

Most of the types of cigarettes used by respondents were clove cigarettes (79.5%) compared to filter cigarettes (20.41%). Most respondents had been smokers for 6-10 years (65.31%). A smoker can also be grouped with the help of the Brinkman Index (IB), namely by multiplying the average number of cigarettes smoked per day multiplied by the number of years of smoking. The majority use cigarettes in the light category, namely 30 people (59.18%). Then there were 18 people (38.78%) who used cigarettes in the moderate category and the remaining person was only 1 person (2.04%) who used cigarettes in the heavy category (Table 2).

Table 2. Frequency Distribution Profile of Cigarette Use

Classification		Frequency (n=49)	Percentage (%)
Type of cigarette	Non-filter Cigarette	39	79.59
	Filter cigarettes	10	20.41
Length of time as a smoker (years)	1-5	6	12.29
	6-10	32	65.31
	10-15	7	14,19
	15-20	4	8.16
Brinkman Index	Mild	30	59.18
	Moderate	18	38.78

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	Severe	1	2.04

3.3 Physical Activity Profile

Physical activity in this study was classified into 13 physical activities, which were described in Table 3. Based on the results of the frequency distribution of physical activity above, it is known that there are 13 categories of physical activity which are then measured using the modified IPAQ questionnaire. After the total physical activity score is obtained, the total score in METs (Metabolic equivalent of task) is categorized based on mild (<600 METs), moderate (600-1500 METs), or heavy (>1500 METs) physical activity categories. After carrying out calculations via IPAQ (International Physical Activity Questionnaire), the following category results were obtained.

Table 3. Frequency Distribution of Physical Activity

Activity	Answer (Minutes/day)	Frequency	Percentage (%)	Mean (Minutes)
Riding a motorcycle	10	2	4.10	445.31
	45	2	4.10	
	60	1	2.00	
	240	7	14.30	
	300	2	4.10	
	360	6	12.20	
	480	11	22.40	
	540	1	2.00	
	600	8	16.30	
	660	1	2.00	
	720	7	14.30	
	900	1	2.00	
Riding a bicycle	15	1	2.00	13.57
	20	1	2.00	
	30	1	2.00	
	60	2	4.10	
	120	1	2.00	
	180	2	4.10	
	None	41	83.70	
Cooking	10	2	4.10	16.12
	15	2	4.10	
	20	1	2.00	
	30	4	8.20	
	60	4	8.20	
	120	3	6.10	
	None	33	67.30	
Washing clothes by hand	10	1	2.00	35.20
	15	2	4.10	
	30	7	14.30	
	45	1	2.00	
	50	1	2.00	
	60	11	22.40	
	120	6	12.20	
	None	20	40.80	
Sweeping the house	10	12	24.50	10.92

Activity	Answer (Minutes/day)	Frequency	Percentage (%)	Mean (Minutes)
	15	5	10.20	
	20	8	16.30	
	30	4	8.20	
	60	1	2.00	
	None	19	38.80	
Walking 100 meters	10	9	18.40	8.78
	15	12	24.50	
	20	5	10.20	
	30	2	4.10	
	None	21	42.90	
Running	15	5	10.20	4.90
	30	4	8.20	
	45	1	2.00	
	None	39	79.60	
Fishing	45	1	2.00	40.10
	180	1	2.00	
	240	1	2.00	
	300	1	2.00	
	360	2	4.10	
	480	1	2.00	
	None	42	85.70	
Playing badminton sport	30	1	2.00	13.47
	45	2	4.10	
	60	1	2.00	
	90	2	4.10	
	120	1	2.00	
	180	1	2.00	
	None	41	83.70	
Playing futsal	90	1	2.00	11.63
	120	1	2.00	
	180	2	4.10	
	None	45	91.80	

3.4 Relationship between Respondent's Smoking Experience and Physical Activity

Based on the descriptive results, the respondents' physical activity categories were moderate (10 of 49) and vigorous (39 of 49). Some respondents had a vigorous level of physical activity and the severity of smoking was mild (25 of 4) (Table 4).

Table 4. Cross Tabulation of Smoking Experience and Physical Activity

Smoking Experience	Physical Activity			Total
	Mild (<600 METs)	Moderate (600-1500 METs)	Vigorous (>1500 METs)	
Mild (<600 METs)	0	5	25	30
Moderate (600-1500 METs)	0	4	14	18
Vigorous (>1500 METs)	0	1	0	1
Total	0	10	39	

Table 5. Correlation Test between Smoking Experience and Physical Activity

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Correlations

		aktivitasfisik	indbrinkman
aktivitasfisik	Pearson Correlation	1	-.659**
	Sig. (2-tailed)		.000
	N	49	49
indbrinkman	Pearson Correlation	-.659**	1
	Sig. (2-tailed)	.000	
	N	49	49

**. Correlation is significant at the 0.01 level (2-tailed).

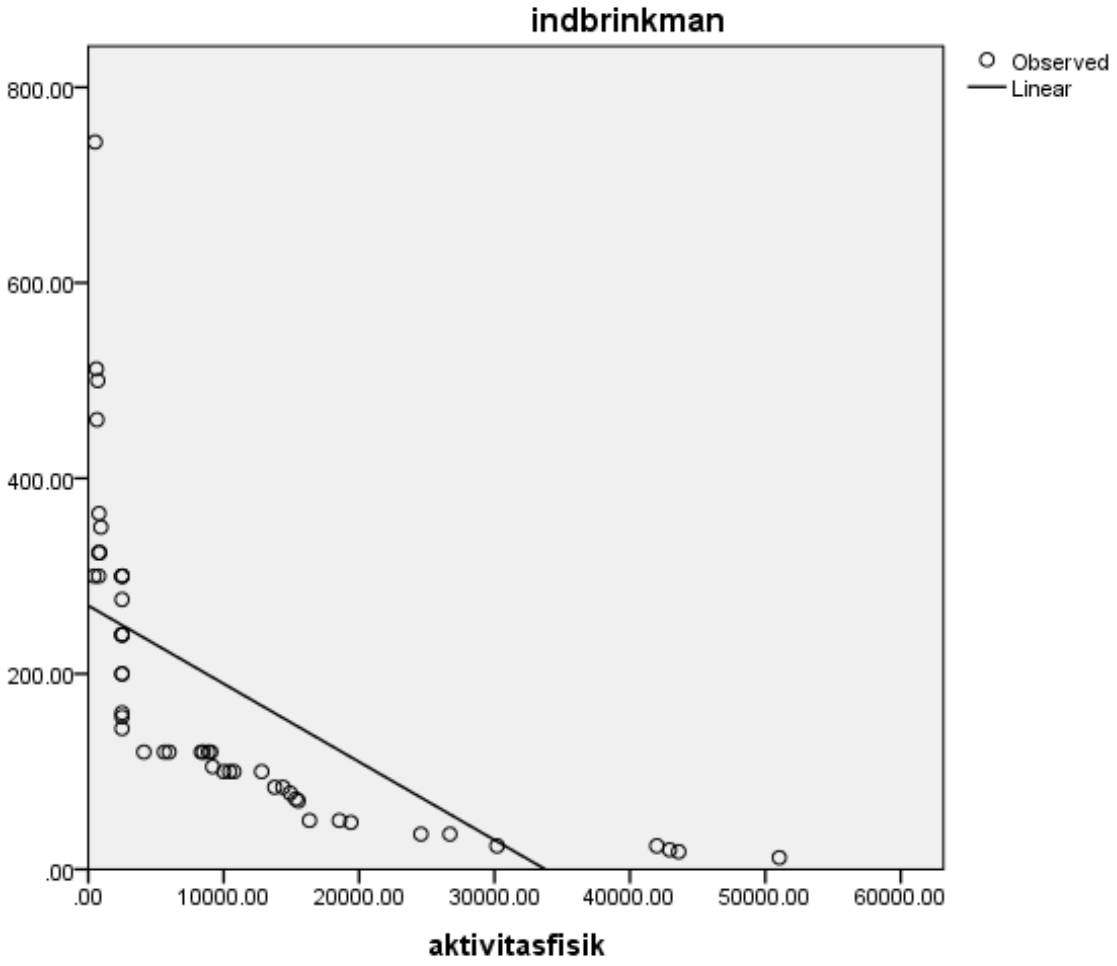

Figure 1. Correlation Test between Smoking Experience and Physical Activity

In the Pearson correlation test, to determine the relationship between the severity of smoking (with the Brinkman index) (X) and the level of physical activity (Y), it showed that there was a significant relationship between the severity of smoking and the level of physical activity, namely r= -0.659 and p=0.000. So there was a negative relationship between the two variables, namely that the higher the severity of smoking, the lower the level of physical activity (Table 5 and Figure 1).

4. Discussion

All respondents were male (100%). Previous research by [31], 10,035 individuals (47.42% male) participated in the study. Compared to female participants, males showed a 7-fold higher prevalence of smoking and started

smoking about 4 years earlier. Most respondents were married (67.37%) (Table 1). Being married, having a lower BMI, living in rural areas, and being exposed to secondhand smoke were predictors of higher smoking prevalence rates. Furthermore, current exposure to secondhand smoke, higher smoking intensity, later smoking initiation, male gender, younger age, lower education, and lower BMI were related to lower likelihood of stopping smoking. Heavy smokers began to smoke about 4 years earlier than casual smokers did. Finally, being divorced/ widow/ widower/ single and childhood exposure to secondhand smoke were found to increase the likelihood of becoming a smoker.

More respondents smoked non-filter cigarettes (79.59%) (Table 2). Filter innovations make cigarettes more appealing, in part by conveying a cleaner image. In fact, filters may increase the harms caused by smoking by enabling smokers to inhale smoke more deeply into their lungs. Furthermore, toxic fibres shed from the cut end of the filter are inhaled and ingested by smokers [33]. Some respondents had smoked for 6-10 years (65.31%) (Table 2). Thus, with increasing age, the severity of COPD was increased. Duration of smoking was also positively related to COPD severity. As patients smoked 20 years more, they experienced malfunction of lung and severe COPD. The combined effect of smoking duration and age were found highly significant among subjects over 20 years aged smoking group for COPD severity [34].

The type of physical activity that respondents often do is driving a motorbike, which is related to the respondent's job as an online motorcycle taxi driver (mean=445.31 minutes). Apart from that, the types of physical activity carried out were washing clothes by hand (mean=35.20 minutes) and fishing (mean=40.10 minutes) (Table 3). The level of physical activity carried out by respondents was moderate (20.41%) and vigorous (79.59%), and none had a light level of activity. Previous research by [35], showed that 68.1% of online motorcycle taxi drivers experienced fatigue. Multivariable analysis showed that the risk factors associated with fatigue among online motorcycle taxi drivers were work stress, lack of physical activity. Previous research by [36], based on these five articles, after summarizing the findings of 10 risk factors related to work fatigue in online motorcycle taxi drivers, namely age, duration of work, total distance traveled, history of illness, length of sleep, over time, work stress, lack of physical activity, marital status. Online motorcycle taxi drivers who do not do physical activity have a greater risk of experiencing fatigue compared to those who do physical activity.

The research results showed that the higher the severity of smoking, the lower the level of physical activity (Table 5 and Figure 1). Previous research by [17], examined the relationship between smoking and physical fitness, they only considered current smoking status and the same fitness measurements regardless of age. The decreased fitness level due to smoking was more noticeable in men than in women, and more than in elderly persons. A non-smoking policy and customized training based on age or gender are necessary to increase fitness and improve health conditions. This is in line with research conducted by [37], states that an active smoker has a lower level of physical activity than non-smokers who have stopped smoking, so it is recommended to stop smoking and increase physical activity in order to live a healthier life. Besides that, [37] stated that an active smoker has a lower level of physical activity than non-smokers who have quit smoking, so it is recommended to stop smoking and increase physical activity in order to live a healthier life.

5. Conclusions

There was a significant negative relationship between the two variables, namely that the higher the severity of smoking, the lower the level of physical activity (r=-0.659 and p=0.000). The most common types of physical activity apart from riding a motorbike which were also related to work were washing clothes by hand (mean=35.20 minutes) and fishing (mean=40.10 minutes).

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Conflict of Interest
The authors declare no conflict of interest.

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Relationship Between Physical Activity and Smoking Experience in Online Motorcycle Taxi Drivers in Surabaya

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Relationship Between Physical Activity and Smoking Experience in Online Motorcycle Taxi Drivers in Surabaya

Amelia Lorensia[1*], Rivan Virlando Suryadinata[2], Dinar Pramesti Paramanandi[1]

Department of Clinical-Community Pharmacy, Faculty of Pharmacy, Universitas Surabaya, Surabaya, Indonesia[1]

Department of Public Health, Faculty of Medicine, Universitas Surabaya, Surabaya, Indonesia[2]

Corresponding Author: 1*

ABSTRACT— The smoking problem is a world health problem and online motorcycle taxi drivers have a smoking habit. Changes in the structure and function of lung tissue cause the flow of incoming oxygen to become less, resulting in shortness of breath in sufferers, causing breathing to become heavier and painful after activity. This study aimed to determine physical activity and smoking experience among online motorbike taxi drivers in Surabaya. The research design used was cross-sectional. This research was conducted in August-November 2020, in Rungkut District, Surabaya City. The research variable was level of physical activity (using International Physical Activity Questionnaire (IPAQ)) and smoking experience (using by the Brinkman Index) in smokers who work as online motorcycle taxi drivers. The total number of respondents was 49 people. In the Pearson correlation test, to determine the relationship between the severity of smoking and the physical activity level. It showed that there was a significant relationship between the severity of smoking and the level of physical activity, namely r= -0.659 and p=0.000. So the higher the severity of smoking, the lower the level of physical activity.

KEYWORDS: physical activity; smoker; online motorcycle taxi driver

1. Introduction

The city of Surabaya is the capital of East Java Province which is the second largest city in Indonesia after Jakarta, so it is used as a center for business, industry and trade where to support all activities carried out, fast-paced and practical technological advances are needed in the field of transportation facilities, namely in the form of online transportation services that can reach road conditions that are congested with vehicles [1]. Online transportation systems generally build partners with drivers [2]. The smoking phenomenon is very easy to find among public transport drivers. The vulnerability of this job to health problems is also great, one of which is caused by their unhealthy behavior, namely the habit of smoking [3]. Online motorcycle taxi drivers take advantage of their free time while waiting for their passengers by smoking cigarettes. This is reinforced by the results of an initial interview survey with one of the online motorcycle taxi drivers where the results of the survey found that online motorcycle taxi drivers have a smoking habit while waiting for passengers to ward off boredom while waiting for orders and avoid falling asleep [4- 6]. In UU No. 22 2009, it is mentioned that the driver of the vehicle must be conscious and not distracted because of tiredness, this situation can cause traffic accidents if forced to keep driving [7].

The smoking problem is a world health problem that is currently still difficult to deal with. WHO states that smoking causes nearly 6 million deaths per year [8]. Indonesia, as one of the world's largest market for smoking tobacco, is significantly affected by tobacco-related illness. The number of smokers in Indonesia

remains high and is expected to increase gradually every year. Smoking is responsible for a high proportion of morbidity and mortality in Indonesia [9]. Apart from that, Indonesia is also the 5th largest tobacco grower in the world [10]. Exposure to cigarette smoke can cause an inflammatory response in the peripheral airways and lung parenchyma. An increase in inflammatory mediators will result in oxidative stress which can disrupt the body's antioxidant defense mechanisms and result in damage or oxidation of lipids, proteins and DNA in cells [11], [12]. Most of the damage to cells does not occur directly, but is caused by Reactive Oxygen Species (ROS) produced such as superoxide radicals, hydroxyl radicals and hydrogen peroxide [13]. Inflammation that occurs in the airways will cause damage to bronchial cilia cells which results in hypersecretion of mucus resulting in narrowing of the airways. These pathological changes cause the lungs to lose elasticity and limit air flow [14].

Cigarette smoke is the main risk factor for chronic obstructive pulmonary disease (COPD), which is characterized by limited air flow in the lungs [15]. Changes in the structure and function of lung tissue cause the flow of incoming oxygen to become less, resulting in shortness of breath in sufferers. The carbon monoxide (CO) gas contained in cigarettes causes hemoglobin desaturation, reducing oxygen circulation throughout the body, causing breathing to become heavier and pain after activity. As a result, physical activity becomes hampered [16]. A person who experiences shortness of breath will become very inactive in daily life, this shows a decrease in activity intensity and an increase in sedentary behavior every day. So, with a decrease in the intensity of this activity, it can be said that respiratory problems that occur due to smoking can cause a decrease in a person's physical activity [17]. This is reinforced by the results of previous research by [18], who found in their research that smokers had less physical activity than non-smokers.

Cigarettes have an acute effect when carrying out sports activities, both in the form of daily physical activity and physical exercise. The acute or immediate effect of smoking on physical activity is characterized by a decrease in the ability to perform physical activity optimally because smokers have reduced aerobic endurance, are easily short of breath, accompanied by a decrease in physical performance in carrying out daily work/tasks and an increased risk of injury [17], [19]. Physical activity is defined as body movement by muscles and skeleton that requires energy expenditure [20]. Physical activity recommended for adults is physical activity including recreation to fill free time, walking or cycling, working, doing housework, playing and sports. Physical activity is done at least 150 minutes a week at moderate intensity and at least 75 minutes a week at high intensity or a combination of moderate and vigorous intensity activities. A high level of physical activity is associated with a good quality of life, both on the scale of the quality of physical health and the quality of mental health. Thus, decreased physical activity can cause worsening health conditions, quality of life and productivity [21], [22].

Regular physical activity will help improve health in people of all ages. Among them, it can help maintain healthy bones, muscles and joints, reduce weight, lower blood pressure, have an effect on reducing cholesterol, manage depression and anxiety [23]. Lack of physical activity is the fourth risk factor for death on a global scale. Prevalence of the population in Indonesia who are classified as lacking in physical activity is 33.5% and in East Java the prevalence of the population who is classified as lacking in physical activity is 26.5%. Measurement of physical activity can be measured using the IPAQ (International Physical Activity Questionnaire) questionnaire [24]. The IPAQ used was modified first because it was adapted to the conditions of the community, which in preliminary studies experienced difficulties in classifying their level of physical activity [25]. This study aimed to determine physical activity and smoking experience among online motorbike taxi drivers in Surabaya.

2. Method

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2.1 Research Design

The research design used was cross-sectional. Data collection is carried out all at once at one time. This research was conducted in August-November 2020. The research location was in the city of Surabaya. The research variable was level of physical activity and smoking experience in smokers who work as online motorcycle taxi drivers. Smokers are those who have consumed ≥100 cigarettes during their lifetime to date or respondents who smoke ≥1 cigarette per day [26]. Smoking severity was measured by the Brinkman Index, which was calculated by multiplying the duration of smoking (in years) by the number of cigarettes smoked per day. These smokers were systematically selected based on the smoking severity for representing mild smokers (<2 cigarettes/day), moderate smokers (>2 and <10 cigarettes/day) and severe smokers (>10 cigarettes/day) [27].

Physical activity was any body movement produced by skeletal muscles which requires energy to move [28]. Physical activity can be measured using International Physical Activity Questionnaire (IPAQ). Respondents will be interviewed to see the physical activity they have done in the last week, and will be grouped into 3 groups, namely Mild Physical Activity (<600 MET-minutes/week), Moderate Physical Activity (600-1500 MET- minutes/week), and Vigorous Physical Activity (>1500 MET- minutes/week) [29- 31]. The physical activity questionnaire uses the IPAQ questionnaire which has been translated from previous research studies by [29- 31]. The questionnaire has been tested for validity and reliability.

2.2 Population And Research Sample

The population in this study were smokers as online motorcycle taxi drivers operating in Rungkut District, Surabaya City. The sample in this study was part of the population that met the criteria: (a) Aged ≥ 17 years; (b) Have working hours of 6-8 hours; (c) Male gender (highest smoking prevalence in men) [24]; (d) Willing to be the object of research and fill out informed consent; (e) Has no history of illness or is currently suffering from asthma, COPD, respiratory tract infections. The sample size formula used is the Lemeshow formula because the population size is unknown. So the sample size (n) in this study was 49 people. Collecting respondents used purposive and accidental sampling methods.

2.3 Research Subject Collection Method

The research subjects were collected by posting announcements on social media and meeting them at base points where many online motorcycle taxi drivers usually wait for potential passengers (such as: malls, terminals, stations, etc). Each potential respondent will be given informed consent as proof of agreement to take part in the research. Researchers will explain the aims and benefits of this research. Information obtained from research subjects will not be disseminated other than for research purposes and the identity of the respondent will only be known by the researcher.

Respondents who have stated that they are willing to take part in this research and be interviewed to find out what physical activity they did during the week. Then the researcher will classify these activities based on the IPAQ formula.

Mild MET-minutes/week = 3.3 x minutes x day
Moderate MET-minutes/week = 4.0 x minutes x days
Vigorous MET-minutes/week = 8.0 x minutes x days

Total physical activity MET-minutes/week = sum of Mild + Moderate + Vigorous MET-minutes/week scores. After the total physical activity score is obtained, the total score in METs (Metabolic equivalent of task) is categorized based on mild (<600 METs), moderate (600-1500 METs), or vigorous (>1500 METs) physical activity categories.

2.4 Data Analysis Method

The data scale for the severity of smoking and physical activity is the ratio. Analysis of the relationship between smoking severity and physical activity using the correlation test. To indicate statistical significance, the p value to 0.05.

3. Result

In this research, 70 potential samples were obtained, who were then contacted one by one until finally a sample of 49 people were obtained who were willing to take part in this research and had filled out informed consent.

3.1 Description of Respondent Characteristics

The total number of respondents who were willing to participate in this research was 49 people. All respondents in this study were male (100%), with an average age of 36 years. The youngest age was 21 years and the oldest age was 46 years (Table 1). The majority of respondents had a married marital status, namely 33 people (67.35%). Most of the respondents in this study did not have comorbidities, namely 47 people (95.92%), and there were 2 people who had a history of dyspepsia (4.08%). Apart from that, the majority of respondents did not consume drugs/supplements/vitamins, 95.92%.

Table 1. Frequency Distribution of Respondents Characteristics

Respondent Characteristics		Frequency (n=49)	Percentage (%)
Age (years)	17-25	10	20.41
	26-35	15	30.61
	36-45	19	38.78
	45-55	5	10.20
Marital status	Married	33	67.35
	Not married yet	16	32.65
Comorbidities	None	47	95.92
	Dyspepsia	2	4.08
Take medication	None	47	95.92
	Supplements / vitamin	2	4.08

3.2 Respondent's Smoking Experience

Most of the types of cigarettes used by respondents were clove cigarettes (79.5%) compared to filter cigarettes (20.41%). Most respondents had been smokers for 6-10 years (65.31%). A smoker can also be grouped with the help of the Brinkman Index (IB), namely by multiplying the average number of cigarettes smoked per day multiplied by the number of years of smoking. The majority use cigarettes in the light category, namely 30 people (59.18%). Then there were 18 people (38.78%) who used cigarettes in the moderate category and the remaining person was only 1 person (2.04%) who used cigarettes in the heavy category (Table 2).

Table 2. Frequency Distribution Profile of Cigarette Use

Classification		Frequency (n=49)	Percentage (%)
Type of cigarette	Non-filter Cigarette	39	79.59
	Filter cigarettes	10	20.41
Length of time as a smoker (years)	1-5	6	12.29
	6-10	32	65.31
	10-15	7	14,19
	15-20	4	8.16
Brinkman Index	Mild	30	59.18
	Moderate	18	38.78

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	Severe	1	2.04

3.3 Physical Activity Profile

Physical activity in this study was classified into 13 physical activities, which were described in Table 3. Based on the results of the frequency distribution of physical activity above, it is known that there are 13 categories of physical activity which are then measured using the modified IPAQ questionnaire. After the total physical activity score is obtained, the total score in METs (Metabolic equivalent of task) is categorized based on mild (<600 METs), moderate (600-1500 METs), or heavy (>1500 METs) physical activity categories. After carrying out calculations via IPAQ (International Physical Activity Questionnaire), the following category results were obtained.

Table 3. Frequency Distribution of Physical Activity

Activity	Answer (Minutes/day)	Frequency	Percentage (%)	Mean (Minutes)
Riding a motorcycle	10	2	4.10	445.31
	45	2	4.10	
	60	1	2.00	
	240	7	14.30	
	300	2	4.10	
	360	6	12.20	
	480	11	22.40	
	540	1	2.00	
	600	8	16.30	
	660	1	2.00	
	720	7	14.30	
	900	1	2.00	
Riding a bicycle	15	1	2.00	13.57
	20	1	2.00	
	30	1	2.00	
	60	2	4.10	
	120	1	2.00	
	180	2	4.10	
	None	41	83.70	
Cooking	10	2	4.10	16.12
	15	2	4.10	
	20	1	2.00	
	30	4	8.20	
	60	4	8.20	
	120	3	6.10	
	None	33	67.30	
Washing clothes by hand	10	1	2.00	35.20
	15	2	4.10	
	30	7	14.30	
	45	1	2.00	
	50	1	2.00	
	60	11	22.40	
	120	6	12.20	
	None	20	40.80	
Sweeping the house	10	12	24.50	10.92

Activity	Answer (Minutes/day)	Frequency	Percentage (%)	Mean (Minutes)
	15	5	10.20	
	20	8	16.30	
	30	4	8.20	
	60	1	2.00	
	None	19	38.80	
Walking 100 meters	10	9	18.40	8.78
	15	12	24.50	
	20	5	10.20	
	30	2	4.10	
	None	21	42.90	
Running	15	5	10.20	4.90
	30	4	8.20	
	45	1	2.00	
	None	39	79.60	
Fishing	45	1	2.00	40.10
	180	1	2.00	
	240	1	2.00	
	300	1	2.00	
	360	2	4.10	
	480	1	2.00	
	None	42	85.70	
Playing badminton sport	30	1	2.00	13.47
	45	2	4.10	
	60	1	2.00	
	90	2	4.10	
	120	1	2.00	
	180	1	2.00	
	None	41	83.70	
Playing futsal	90	1	2.00	11.63
	120	1	2.00	
	180	2	4.10	
	None	45	91.80	

3.4 Relationship between Respondent's Smoking Experience and Physical Activity

Based on the descriptive results, the respondents' physical activity categories were moderate (10 of 49) and vigorous (39 of 49). Some respondents had a vigorous level of physical activity and the severity of smoking was mild (25 of 4) (Table 4).

Table 4. Cross Tabulation of Smoking Experience and Physical Activity

Smoking Experience	Physical Activity			Total
	Mild (<600 METs)	Moderate (600-1500 METs)	Vigorous (>1500 METs)	
Mild (<600 METs)	0	5	25	30
Moderate (600-1500 METs)	0	4	14	18
Vigorous (>1500 METs)	0	1	0	1
Total	0	10	39	

Table 5. Correlation Test between Smoking Experience and Physical Activity

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Correlations

		aktivitasfisik	indbrinkman
aktivitasfisik	Pearson Correlation	1	-.659**
	Sig. (2-tailed)		.000
	N	49	49
indbrinkman	Pearson Correlation	-.659**	1
	Sig. (2-tailed)	.000	
	N	49	49

**. Correlation is significant at the 0.01 level (2-tailed).

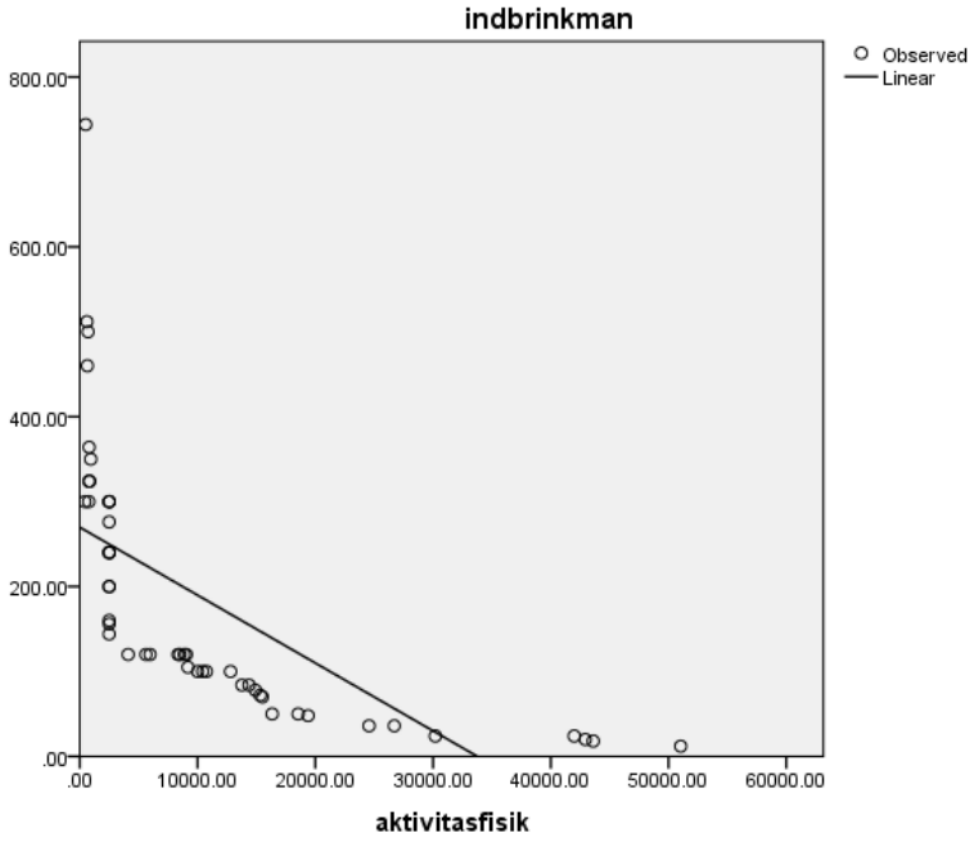

Figure 1. Correlation Test between Smoking Experience and Physical Activity

In the Pearson correlation test, to determine the relationship between the severity of smoking (with the Brinkman index) (X) and the level of physical activity (Y), it showed that there was a significant relationship between the severity of smoking and the level of physical activity, namely r= -0.659 and p=0.000. So there was a negative relationship between the two variables, namely that the higher the severity of smoking, the lower the level of physical activity (Table 5 and Figure 1).

4. Discussion

All respondents were male (100%). Previous research by [31], 10,035 individuals (47.42% male) participated in the study. Compared to female participants, males showed a 7-fold higher prevalence of smoking and started

smoking about 4 years earlier. Most respondents were married (67.37%) (Table 1). Being married, having a lower BMI, living in rural areas, and being exposed to secondhand smoke were predictors of higher smoking prevalence rates. Furthermore, current exposure to secondhand smoke, higher smoking intensity, later smoking initiation, male gender, younger age, lower education, and lower BMI were related to lower likelihood of stopping smoking. Heavy smokers began to smoke about 4 years earlier than casual smokers did. Finally, being divorced/ widow/ widower/ single and childhood exposure to secondhand smoke were found to increase the likelihood of becoming a smoker.

More respondents smoked non-filter cigarettes (79.59%) (Table 2). Filter innovations make cigarettes more appealing, in part by conveying a cleaner image. In fact, filters may increase the harms caused by smoking by enabling smokers to inhale smoke more deeply into their lungs. Furthermore, toxic fibres shed from the cut end of the filter are inhaled and ingested by smokers [33]. Some respondents had smoked for 6-10 years (65.31%) (Table 2). Thus, with increasing age, the severity of COPD was increased. Duration of smoking was also positively related to COPD severity. As patients smoked 20 years more, they experienced malfunction of lung and severe COPD. The combined effect of smoking duration and age were found highly significant among subjects over 20 years aged smoking group for COPD severity [34].

The type of physical activity that respondents often do is driving a motorbike, which is related to the respondent's job as an online motorcycle taxi driver (mean=445.31 minutes). Apart from that, the types of physical activity carried out were washing clothes by hand (mean=35.20 minutes) and fishing (mean=40.10 minutes) (Table 3). The level of physical activity carried out by respondents was moderate (20.41%) and vigorous (79.59%), and none had a light level of activity. Previous research by [35], showed that 68.1% of online motorcycle taxi drivers experienced fatigue. Multivariable analysis showed that the risk factors associated with fatigue among online motorcycle taxi drivers were work stress, lack of physical activity. Previous research by [36], based on these five articles, after summarizing the findings of 10 risk factors related to work fatigue in online motorcycle taxi drivers, namely age, duration of work, total distance traveled, history of illness, length of sleep, over time, work stress, lack of physical activity, marital status. Online motorcycle taxi drivers who do not do physical activity have a greater risk of experiencing fatigue compared to those who do physical activity.

The research results showed that the higher the severity of smoking, the lower the level of physical activity (Table 5 and Figure 1). Previous research by [17], examined the relationship between smoking and physical fitness, they only considered current smoking status and the same fitness measurements regardless of age. The decreased fitness level due to smoking was more noticeable in men than in women, and more than in elderly persons. A non-smoking policy and customized training based on age or gender are necessary to increase fitness and improve health conditions. This is in line with research conducted by [37], states that an active smoker has a lower level of physical activity than non-smokers who have stopped smoking, so it is recommended to stop smoking and increase physical activity in order to live a healthier life. Besides that, [37] stated that an active smoker has a lower level of physical activity than non-smokers who have quit smoking, so it is recommended to stop smoking and increase physical activity in order to live a healthier life.

Conclusions

There was a significant negative relationship between the two variables, namely that the higher the severity of smoking, the lower the level of physical activity (r=-0.659 and p=0.000). The most common types of physical activity apart from riding a motorbike which were also related to work were washing clothes by hand (mean=35.20 minutes) and fishing (mean=40.10 minutes).

Conflict of Interest

The authors declare no conflict of interest.

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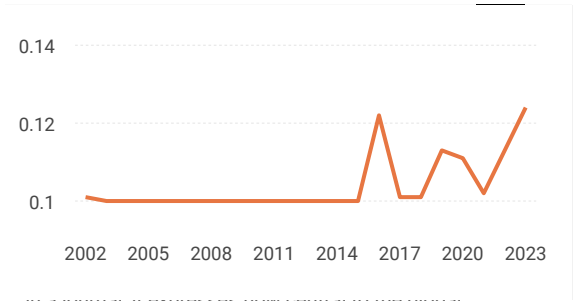

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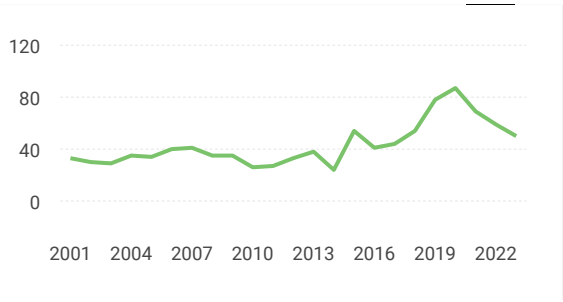

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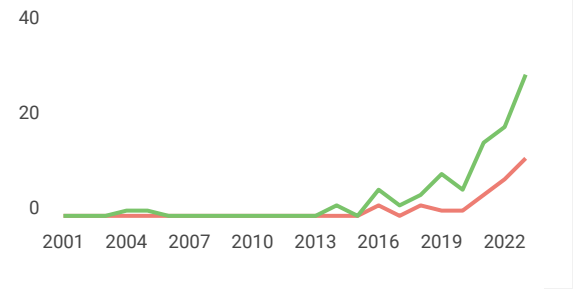

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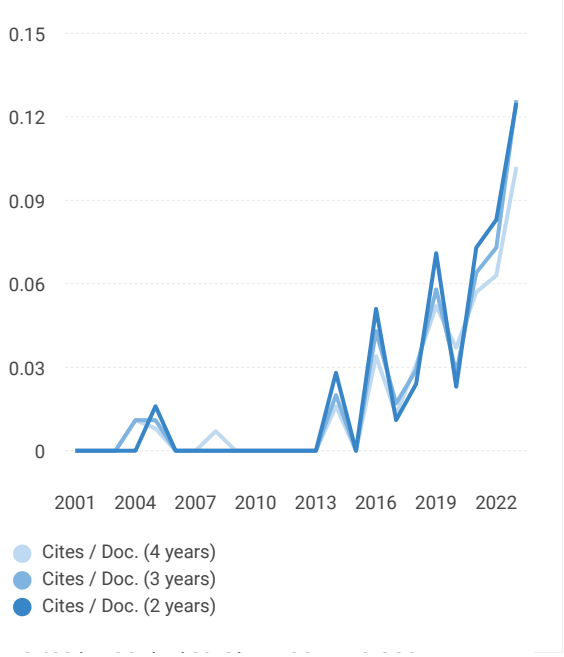

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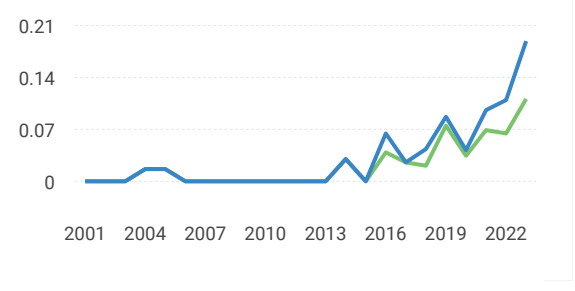

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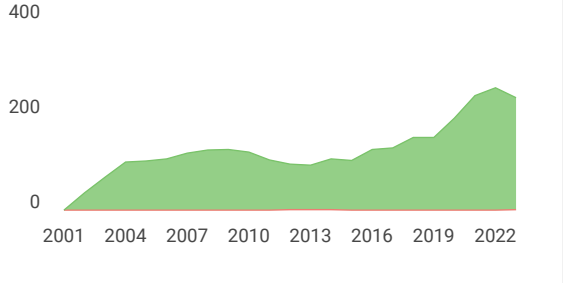

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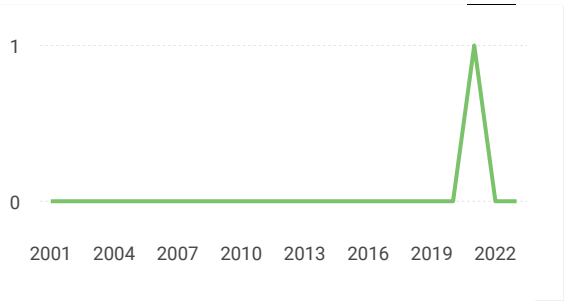

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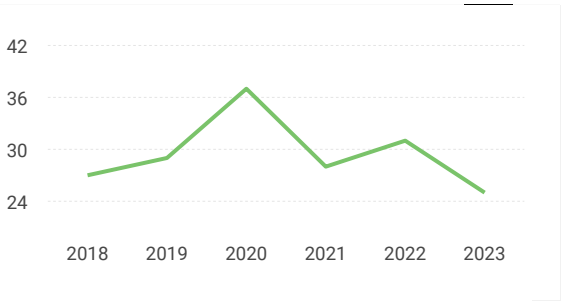

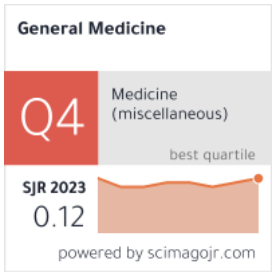

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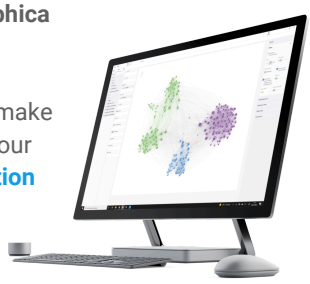

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