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The Relationship Between Age, Work Duration and Reactive Movement of Pressing *Nozzle* with *Subjective Complaints of Carpal Tunnel Syndrome* (CTS) in Fuel Filling Operator Officers at Yogyakarta City Gas Stations in 2019

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ABSTRACT

Background: *Carpal Tunnel Syndrome* (CTS) is a health problem caused by the compression or pinching of the median nerve that passes through the carpal tunnel in the upper extremities. Several subjective complaints *of Carpal Tunnel Syndrome* were found at three petrol stations in Yogyakarta City. In addition, subjective complaints *of Carpal Tunnel Syndrome* are also influenced by age, duration of work and *repetitive movements*. This study aims to determine the relationship between age, work duration and *repetitive movements* of pressing *the nozzle* with subjective complaints *of Carpal Tunnel Syndrome* in fuel filling operators at petrol stations. **Methods:** The type of research used is quantitative descriptive research with *a cross sectional approach.* This research was carried out at three Yogyakarta City petrol stations, namely Giwangan petrol station, Lempuyangan petrol station and Semaki petrol station with a research sample of 46 people. Data collection was carried out by questionnaire method about CTS subjective complaints to fuel filling operators. This study uses *univariate, bivariate* analysis and *chi-square test*. **Results:** It was found that there was a relationship between the age variable and the subjective complaints of CTS with *a p-value* of 0.005, there was a relationship between the variable of work duration and the subjective complaints of CTS with *a p-value* of 0.038 and there was a relationship between the variable *of repetitive movements* and the subjective complaints of CTS with *a p-value* of 0.038. **Conclusion:** Based on the results of the study, the variables of age, duration of work and *repetitive movements* of pressing *the nozzle* have a relationship with subjective complaints of CTS in fuel filling operators at three petrol stations in Yogyakarta City.

1. Introduction

Carpal tunnel syndrome (CTS) is a disease caused by repeated flexi movements and extensions that make the medianus nerve (median nerve) pinched by the transverse carpal ligament / carpal ligment so that the hand will feel uncomfortable when used to work such as pain, tingling and even numbness. Factors that affect CTS include age, increasing age can increase the risk of developing Carpal Tunnel Syndrome, usually occurring at the age of 30-60 years. Then the duration of work, the duration of a person's physical work in a day is 6-8 hours. And a 30-minute break after 4 hours of continuous work is essential to relax the muscles and nerves. Finally, Reactive Movements, or movements that are performed repeatedly without rest time for the muscles that are working cause the muscles to become tired and cramp.

As one of the 3 types of diseases that are often in the CTD group in the upper *extremities* with a *prevalence of* CTS of 40%, *tendosinovitis* consists of *trigger finger* 32% and *De Quervan's* syndrome 12%, while *epicondilitis* is 20%. More than 50% of all occupational diseases in the USA are CTD, one of which is *carpal tunnel syndrome* (Salawati, 2014). The average *prevalence* reached 9.2% in women and 6% in men. The incidence of CTS reaches 276 per 100,000 inhabitants per year. In Sweden, *the prevalence* occurs around 2.7% while in the UK, *the prevalence* is around 7-16% and in Indonesia, there is no exact data on the relevance of the event (Dito, 2016).

Furthermore, CTS is a disease that arises due to the medianus nerve being compressed in the carpal tunnel in the wrist, when *the nerve* passes through the tunnel from the forearm to the hand (Salawati, 2014). *Carpal tunnel syndrome* (CTS) can also result in losses due to a decrease in a person's (productive) ability, this requires preventive efforts to avoid such occurrences in the workforce in order to reduce medical costs and increase compensation due to limitations and disabilities in the workforce. The symptoms felt in a person affected by CTS disease vary, ranging from feeling a little uncomfortable to being unable to do work with repetitive movements of the hand (Setyowati, 2015).

A preliminary study at petrol stations in the Yogyakarta City area has a workforce of 46 people as operators of Public Fuel (BBM), including 15 people from the Giwangan petrol station, 16 people from the Lempuyangan petrol station, and 15 people from the Semaki petrol station. Then, the age of the workforce as a fuel filling operator is between 19 years old and 53 years old. Every 1-2 fuel filling operators work for 7 to 8 hours and are allowed to take a break between 3-5 hours after work. Fuel filling operators are assigned by the Public Fuel Filling Station (SPBU) to maintain and handle 1 fuel pouring dispenser machine so that repeated movements on the hands occur due to distributing fuel to consumers using *nozzles* for a long time. It was found that 3 out of 5 officers with a division of 5 men and 4 women, namely 2 men and 1 woman from the Giwangan petrol station, 2 men and 2 women from the Lempuyangan petrol station, 1 man and 1 woman from the Semaki petrol station experienced complaints of pain and tingling in the shoulders to the fingers except for half of the palmar ring finger and pinky. The purpose of the study is to determine the relationship between age, work duration, and repetitive movements pressing the nozzle with subjective complaints of carpal tunnel syndrome (CTS) in fuel filling operator officers at three petrol stations in Yogyakarta City in 2019.This study aims to determine the relationship between age, work duration, and repetitive movements pressing the nozzle with subjective complaints *of carpal tunnel syndrome* (CTS) in fuel filling operator officers at petrol stations in Yogyakarta City.

2. Materials and Method

The type of research used is quantitative descriptive research with *a cross sectional approach.* This research was carried out at Lepuyangan petrol stations, Giwangan petrol stations, Semaki petrol stations in Yogyakarta City with a research sample of 46 people. Data collection was carried out by questionnaire method about subjective complaints *of Carpal Tunnel Syndrome* in Fuel Filling Officers at Lempuyangan petrol stations, Giwangan petrol stations and Semaki petrol stations. Then, this study also uses univariate and bivariate analysis, namely *the chi-square test.*The process in this study is divided into the following chart:

Figure 1. The Course of Research

3. Results and Discussion

From the data collection that has been carried out and data processing is carried out, the following results and discussions are found.

3.1. Results

3.1.1 Respondent Characteristics

The characteristics of the respondents in this study can be seen in the following table.

a. Respondents' Character Based on Age

Table 1. Distribution of Respondent Age Frequency at Giwangan Petrol Station, Lempuyangan Petrol Station, and Semaki Petrol Station in Yogyakarta City

Age	Frequency	Percentage (%)
<29 Years	9	19,6
>29 Years	37	80,4
Total	46	100,0

Source: Primary Data, 2019

Based on Table 1, it can be seen that the number of respondents at the three petrol stations was 46 respondents with 29-year-old > 37 (80.4%) and 29-year-< 9 people (19.6%).

b. Characteristics of Respondents Based on Reactive Movements
Based on the results of filling out the questionnaire carried out, the distribution of respondents was obtained

Table 2. Distribution of Repetitive Movements to Suppress *Nozzle* from Respondents at Giwangan Petrol Station, Lempuyangan Petrol Station, and Semaki Petrol Station in Yogyakarta City

Reactive Motion Pressing *Nozzle*	Frequency	Percentage (%)
<30 reactive movements/minute	18	39,1
>30 reactive movements/minute	28	60,9
Total	46	100,0

Source: Primary Data, 2019

Based on table 2, it can be seen that 18 respondents (39.1%) who performed <30 repetitive movements per minute (rarely), then 28 respondents (60.9%) who performed >30 per minute (frequent) nozzle pressing movements

c. Characteristics of Respondents Based on CTS Subjective Complaints Based on the results of filling out the questionnaire carried out,

The results of filling out the questionnaire were obtained subjective complaints of *carpal tunnel syndrome* (CTS) from respondents at three petrol stations in Yogyakarta City as follows:

Table 3. Distribution of Subjective *Carpal Tunnel Syndrome* (CTS) Complaints from Respondents at Giwangan Petrol Station, Lempuyangan Petrol Station, and Semaki Petrol Station in Yogyakarta City

CTS Subjective Complaints	Frequency	Percentage (%)
No risk	12	26,1
Risky	34	73,9
Highly risky	0	0
Total	46	100,0

Source: Primary Data, 2019

Based on table 3, it can be seen that 12 respondents (26.1%) who are not at risk of CTS based on subjective complaints of CTS, then those who are at risk of CTS based on subjective complaints of CTS are 34 respondents (73.9%).

3.1.2. Univariate Analysis

Univariate *analysis* is used to find out the general overview of each research variable to produce the frequency distribution and percentage of each variable.

a) Distribution By Age

Age in subjective complaints of *carpal tunnel syndrome* (CTS) is classified into two, namely under 29 years old and over 29 years old. The age of the respondents can be seen in the table below. The age of the respondents can be seen in the table below:

Table 4. Age Distribution of Respondents

It	Age of Respondents	Frequency	Percentage (%)
1.	<29 Years	9	19,6
2.	>29 Years	37	80,4
	Sum	46	100,00%

Source: primary data, 2019

Age is an *independent* variable studied in this study. The total number of respondents was 46 respondents under the age of 29 years (not at risk) amounting to 9 respondents (19.6%) and over 29 years old (at risk) as many as 37 respondents (80.4%).

b) Distribution According to Work Duration

The duration of work in carpal *tunnel syndrome* (CTS) subjective complaints is classified into two levels, namely fuel filling operator officers who are allowed to rest after a work duration of 3 hours and fuel filling operator officers who are allowed to rest after a work duration of 5 hours. The duration of the respondent's work can be seen in the table below

Table 5. Distribution of Respondents' Work Duration

It	Duration Respondent's Work	Frequency	Percentage (%)
1.	3 hours	15	32,6%
2.	5 hours	31	67,4%
	Sum	46	100,00%

Source: primary data, 2019

Work duration is an *independent variable* that is studied in this study. The total number of respondents was 46 respondents with the classification of respondents who were allowed to take a break after a work duration of 3 hours (not at risk), 15 respondents (32.6%) and 31 respondents (67.4%) who were allowed to take a break after a work duration of 5 hours.

c) Distribution of Respondents According to Reactive Movements Pressing *Nozzle*
Retinative movements suppressing *the nozzle* in subjective complaints *of carpal tunnel syndrome* (CTS) are classified into two levels, namely rare or <30 times of reactive movement in 1 minute, and frequent or >30 reactive movements in 1 minute. The reactive movement of pressing *the noozle* can be seen in the table below:

Table. 6 distribution of reactive motion pressing *nozzle*

It	Reactive Pressing Nozzle	Frequency	Percentage (%)
1.	<30 reactive movements/minute	18	39,1
2.	>30 reactive movements/minute	28	60,9
	Total	46	100,0

Source: primary data, 2019

The repetitive movement of pressing *the nozzle* per minute is an *independent* variable studied in this study. The total number of respondents was 46 respondents with the number of reactive movements pressing *the nozzle* <30 times/minute (rarely) as many as 18 respondents (39.1%), and the reactive pressing *movements of the nozzle* >30 times/minute (frequently) as many as 28 respondents (60.9%).

d) Distribution of Respondents According to CTS Subjective Complaints
Subjective complaints *of carpal tunnel syndrome* (CTS) are classified into three conclusions, namely very risky, risky and not risky. Respondents' subjective complaints of CTS can be seen in the table below:

Table. 7 CTS subjective complaint distribution

It	Subjective Complaints	Frequency	Percentage (%)
1.	No risk	12	26,1
2.	Risky	34	73,9
3.	Highly risky	0	0
	Total	46	100,0

Source : primary data, 2019

Subjective complaints *of carpal tunnel syndrome* (CTS) are a *dependent* variable studied in this study. The total number of respondents was 46 respondents with subjective complaints of non-risk CTS amounting to 12 respondents (26.1%), while for those with a risk value as many as 34 respondents (73.9%) and those with a very high risk as many as 0 respondents (0%).

3.1.3. Bivariate Analysis

a) Age Relationship with Subjective Complaints *of Carpal Tunnel Syndrome* (CTS)

Age relationship with CTS subjective complaints in fuel filling operator officers at three Yogyakarta City petrol stations in table 8. The age of respondents who had subjective complaints of CTS was 46 respondents. The age category of respondents is divided into two categories, namely <29 years old and >29 years old.

Table 8. Age relationship with CTS subjective complaints in fuel filling operator officers at Giwangan petrol stations, Lempuyangan petrol stations, and Semaki petrol stations in Yogyakarta City

Age	CTS Subjective Complaints				Total		*RP*	*P* Value
	Risky		No Risk					
	N	%	N	%	N	%		
<29 Years	3	6,5	6	13,0	9	19,6	2,514	
>29 Years	31	67,4	6	13,0	37	80,4	(2,007-	0.005
Sum	34	73,9	12	26,1	46	100,0	53,194)	

Source: Primary Data, 2019

Based on Table 8, it can be seen that the sig value (*p value*) < α (0.05) is 0.005 and the *prevalence ratio value* is 2.514 (95% CI 2.007-53.194) which means that there is a relationship between age and subjective complaints *of carpal tunnel syndrome* (CTS) in fuel filling operator officers at Giwangan petrol stations, Lempuyangan petrol stations, and Semaki petrol stations in Yogyakarta City. Then RP 2,514 (95% CI 2,007-53,194) was obtained, showing that the variable age of fuel filling operators over 29 years old will result in a 2,514 greater risk of subjective *carpal tunnel syndrome* (CTS) complaints compared to the age of fuel filling operators under 29 years old. The *value of RP* > 1 and the CI range exceeded 1, so it can be concluded that age over 29 years is a risk factor for subjective complaints of *carpal tunel syndrome* (CTS).

b) The Relationship Between Work Duration and Subjective Complaints *of Carpal Tunnel Syndrome* (CTS)

The relationship between work duration and CTS subjective complaints in fuel filling operator officers at three petrol stations in Yogyakarta City in table 9. The duration of work of respondents who had subjective complaints about CTS was 46 respondents. The category of respondents' work duration was divided into two categories, namely the working duration of <4 hours of work and having taken a break and the working duration of >4 hours of working without a break.

Table 9. The Relationship between Work Duration and CTS Subjective Complaints at Fuel Filling Operator Officers at Giwangan Petrol Station, Lempuyangan Petrol Station, and Semaki Petrol Station in Yogyakarta City

Work Duration	CTS Complaints				Total		*RP*	*P* Value
	Risky		No Risk					
	N	%	N	%	N	%		
<4 hours	8	17,4	7	15,2	15	32,6	1,573	0.038
>4 hours	26	56,5	5	10,9	31	67,4	(1,128-	
							18,352)	
Sum	34	73,9	12	26,1	46	100,0		

Source: Primary Data, 2019

Based on table 9, it can be seen that the sig value (*p value*) < α (0.05) is 0.038 and *the prevalence ratio value* is 1.573 (95% CI 1.128 – 18.352) which means that there is a relationship between work duration and subjective complaints *of carpal tunnel syndrome* (CTS) in fuel filling operator officers at Giwangan petrol stations, Lempuyangan petrol stations, and Semaki petrol stations in Yogyakarta City. Then RP 1,573 (95% CI 1,128 – 18,352) was obtained, showing that the variable of the working duration of the fuel filling operator who worked more than 4 hours without a break would result in a risk of subjective carpal *tunnel syndrome* (CTS) as much as 1,573 more than the working duration of the fuel filling operator officer under 4 hours and had taken a break. > 1 and the CI range exceeded 1, so it can be concluded that the duration of work is a risk factor for subjective complaints of *carpal tunel syndrome* (CTS).

c) Relationship of Reactive Movements Pressing *Nozzle* with Subjective Complaints *of Carpal Tunnel Syndrome* (CTS)

The relationship between reactive movement pressing *the nozzle* and CTS subjective complaints in fuel filling operators at three petrol stations in Yogyakarta City in table 10. The duration of work of respondents who had subjective complaints about CTS was 46 respondents. The category of respondents' repetitive movements is divided into two categories, namely rarely or <30 times reactive movements per minute and frequent or >30 times repetitive movements per minute.

Table 10. The Relationship between the Receptive Movement Pressing *the nozzle* and the subjective complaints of CTS at fuel filling operators at Giwangan petrol stations, Lempuyangan petrol stations, and Semaki petrol stations in Yogyakarta City

Reactive Movements	CTS Complaints				Total		*RP*	*P* Value
	Risky		No Risk					
	N	%	N	%	N	%		
<30 reactive movements/minute	10	21,7	8	17,4	18	39,1	1,543 (1,173-19,637)	0.038
>30 reactive movements/minute	24	52,2	4	8,7	28	60,9		
Sum	34	73,9	12	26,1	46	100,0		

Source: Primary Data, 2019

Based on table 10, it can be seen that a sig value (*p value*) < *α* (0.05) is obtained which is 0.038 and a *ratio prevalence value* of 1.543 (95% CI 1.173 – 19.637) which means that there is a relationship between the repetitive movement of pressing *the nozzle* and subjective complaints *of carpal tunnel syndrome* (CTS) in fuel filling operators at Giwangan petrol stations, Lempuyangan petrol stations, and Semaki petrol stations in Yogyakarta City. Then RP 1,543 (95% CI 1,173 – 19,637) was obtained, showing that the variable of repatitive movement pressing *the nozzle* in fuel filling operators who often perform repetitive movements pressing *the nozzle* will result in a 1,543 greater risk of subjective carpal *tunnel syndrome* (CTS) complaints compared to Fuel filler operators who rarely make reactive movements to press *the nozzle*. RP value > 1 and CI range exceeding 1, so it can be concluded that the reactive movement of pressing *the nozzle* is a risk factor for subjective complaints of *carpal tunel syndrome* (CTS).

3.2. Discussion

1) Age Relationship with Subjective Complaints *of Carpal Tunnel Syndrome* (CTS)

Based on Table 8, it is known that the results of the statistical test using *the exact fisher* test at a confidence level of 95% or *α* = 0.05 in a *p value* (0.005) < *α* so that there is a relationship between age and subjective complaints *of Carpal Tunnel Syndrome* (CTS) in fuel filling operators at Giwangan petrol stations, Lempuyangan petrol stations, and Semaki petrol stations in Yogyakarta City.

In this study, statistically showed a significant relationship between the age of workers and the subjective complaints of CTS fuel filling operators at three petrol stations in Yogyakarta City, this is because CTS usually occurs at the age of 30-60 years (Hobby et al, 2005). Another possibility is that age-related changes in collagen hormones cause the *flexor retinaculum* to experience a lack of elasticity due to the individual's age. As a result, a person's *retinal flexor* (30 years and older) will be less likely to accommodate volume changes without increasing pressure. Fuel filling operators who are

over 30 years old, it is likely that they have been working at the petrol station for a long time, so they are more comfortable working in the old place than looking for another job with their age that is no longer young.

The results of this study are in line with those conducted by Hartanti (2018) there is a relationship between age variables and the incidence of CTS with *a p value = 0.027*. Furthermore, the same results are shown by the results of Lazuardi's (2016) research that individual characteristics, namely age, have a significant relationship with CTS symptoms, the older the worker, the more risk of CTS symptoms will be. This study is also in line with what was conducted by Farhan et al. (2018) that there is a relationship between age and the CTS Factor in motorcycle taxi drivers with *a p value = 0.045*. Finally, this study is in line with the results of Wardana (2018) with the relationship between age variables and the incidence of CTS with *a p value = 0.001*. This study is in line with Wahyuni, et al. (2023) there is a relationship between age and CTS complaints in couriers in Samarinda City.But this study is different from the research of Nurullita, et al. (2023) that there is no relationship between age and CTS complaints in workers with Pressing and Repetitive Movements because age itself is a factor that is not related to work, but from the research itself degeneration appears at the age of 30 years. This condition is affected by the stability of tissues, tissues and muscles which then affects tissue damage, tissue decline and tissue turnover into scar tissue which then increases the risk of CTS (Wardana, et al, 2018).

2) The Relationship Between Work Duration and Subjective Complaints *of Carpal Tunnel Syndrome* (CTS)

Based on Table 9, it is known that the results of the statistical test using *the exact fisher* test at a confidence level of 95% or *α* = 0.05 in the *p value* (0.038) < *α* so that there is a relationship between the duration of work and subjective complaints *of carpal tunnel syndrome* (CTS) in fuel filling operator officers at three petrol stations in Yogyakarta City.

Based on the research that has been conducted, there is a relationship between work duration and CTS complaints. SBPU in the city of Yogyakarta operates 24 hours a day which is divided into 3 *shifts* for each fuel filling operator. Some fuel filling operators work >4 hours before finally resting, then continue their work until the shift is over. Fuel filling operators with a working duration of >4 hours are at risk of experiencing CTS complaints.

The physique of a person who does work for more than 4 hours without rest can trigger disorders in the *musculoskeletal* as a result of the work performed. Reactive movements that are carried out continuously for a long period of time can cause *stress* on the network around the carpal tunnel, and can affect the median nerve (*median nerve*) which is increasingly depressed due to repetitive movements carried out (Suherman, 2012).

Long working hours will cause a decrease in quality and work output, and work with prolonged or long hours can cause a tendency to fatigue, health problems, diseases and accidents as well as dissatisfaction (Suma'mur, 2006). The longer a person works, the longer there is pressure on the medianus nerve which can magnify the incidence of CTS. With an increase in the duration of work, it shows that there is repetitive work done by the hand over a long period of time, indicating a higher risk for CTS (Ali, 2006).

The results of this study are in line with those carried out by Sekarsari (2017) that the results of *the chisquare test = 0.032 < α (0.05)* so that there

is a relationship between the duration of work and CTS complaints in stone breakers in North Maromo District, South Konawe Regency. Of the 64 respondents who had a working time of more than 4 hours, 39 respondents (60.9%) were positive for CTS. Furthermore, according to the results of research from Selviyati (2016) that there is a relationship between the length of work and the incidence of CTS in rubber tree tapping farmers in Karang Manik Village, Belitang 2 District, East Oku Regency with *a p value = 0.013*. Then this study is in line with the results of Amalia (2019) that there is a variable relationship between the length of work and the incidence of CTS in female workers in the tobacco warehouse of Ajung District, Jember Regency with *a p value = 0.036*.

This is supported by an explanation that states that the length of a day's work according to Law No. 13/2003 Article 77 paragraph 1 is generally 6-8 hours. Extending working hours beyond these abilities is usually not accompanied by high efficiency, in fact, it is usually seen as a decrease in productivity and a tendency to fatigue, occupational diseases (PAK) and accidents. Ordinary work, not too light or heavy, productivity will begin to decline after 4 hours of continuous work. This condition is in line with the decrease in blood sugar levels. Therefore, taking a half-hour break after 4 hours of continuous work is very important. In accordance with the results of the *literature review*, in this work duration, CTS is related to the 15 articles reviewed (Fadhillah, et al. (2024)

3) Relationship of Reactive Movements Pressing *Nozzle* with Subjective Complaints *of Carpal Tunnel Syndrome* (CTS)

Based on Table 10, it is known that the results of the statistical test using *the exact fisher* test at the confidence level of 95% or $\alpha = 0.05$ in the *p value* (0.038) < α so that there is a relationship between the repetitive movement of pressing *the nozzle* and the subjective complaint *of Carpal Tunnel Syndrome* (CTS) at fuel filling operators at Giwangan petrol stations, Lempuyangan petrol stations, and Semaki petrol stations in Yogyakarta City.

Reactive movements are a series of movements that have little variation and are performed every few seconds, which can result in fatigue and tension in a group of strong fibrous connective tissue that connects muscle tissue to bones (*tendons*). If the time spent resting cannot reduce the effect, or if movements that are also in odd positions or that require great rest, the risk of tissue damage and other *musculoskeletal* problems may increase with repetitions of less than 30 seconds already considered reactive movements (Rina, 2010).

Bernardo (1997) proposed that reductive movements for CTS are defined as the repetition of activities in the hand and wrist involved as a repetitive cycle of work both repetitive hand/finger movements as well as wrists such as grips, or wrist *extension/flexion* and *ulnar/radial deviation*. Increased repetition of the same movements every day will increase the risk of developing *tendinitis*. This damage can cause *compression* of the nerves and cause CTS. Repetitive movements can increase the pressure on the Carpal Tunnel. An increase in intensity and duration for a long time will reduce blood flow to the peripheral blood vessels. Over a long period of time, blood flow will affect *capillary circulation* and eventually have an impact on the ability to pass through blood vessels in the wrist (Kurniawan, 2008).

In a study conducted by Sekarsari (2017), there were 58 respondents with workers suffering from CTS performing reactive movements >30 times

per minute. The results of *the p value = 0.020,* the results of the analysis showed *a p value of* < 0.05 which means that there is a significant relationship between repetitive movements and CTS complaints, the result *of p value = 0.020 was obtained*. The results of this study are also in line with the research conducted by Selviyati (2016) that there is a relationship between repetitive movement and the incidence of CTS in rubber tree tappers in Karang Manik Village, Belitang 2 District, East Oku Regency with *a p value = 0.036*. Then, the same results were obtained from the Wardana (2018) study which stated that there was a relationship between repetitive movements and CTS events with *a p value = 0.042*.

The Ergonomics factor greatly affects the occurrence of work accidents. Ergonomic Risk Factors are workplace elements that are related to the discomfort experienced by workers while working, and if ignored, can over time add damage to the worker's body due to accidents. Ergonomic factors that cause pain risk include repetitive motion, awkward posture, pressure, duration, temperature vibration

As explained in the Qur'an, surah Al-An'am verse 17 "And if Allah inflicts any harm on you, then no one will eliminate it except Him.

alone. And if He brings good to you, He is Almighty over everything." And surah Ash-Shu'ra verse 80 which reads: "And when I am sick, He is the one who heals me". So there is no disease that has no cure.

Being careful in a job is an important factor to prevent an unwanted event, one of which is to avoid a disease. In surah Al-Maidah verse 92 it is explained, Islam teaches us to always be careful in doing any work, including when working to avoid CTS.

4. Conclusion

It was concluded that there was a relationship between age, duration and repetitive movements of pressing the nozzle with subjective complaints *of carpal tunnel syndrome* (CTS) in petrol station fuel filling operators in Yogyakarta City.

Declaration

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Conflicts of Interest: The data in this study has been published from the UAD repository and has never been published.

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