Timorese Journal of Public Health
Volume 4, No 4, December 2022: 172-182 e-ISSN 2685-4457
https://ejurnal.undana.ac.id/tjph https://doi.org/10.35508/tjph

Overview of the Carpal Tunnel Syndrome (CTS) Incidents in Maxim Bike Riders in Kupang City

Michaelis Diana Anggriani[1)] Noorce Ch. Berek[2)], Johny A. R. Salmun[3)]
[123]) Public Health Science Program, Public Health Faculty,Nusa Cendana University;
diianaanggriani71@gmail.com tiani.tarigan.79@gmail.com Johnysalmun@gmail.com

ABSTRACT

Online motorcycle taxi riders are one of the jobs that are risk of CTS due to the long wrist posture on the handlebar. The results of a preliminary study of 14 Maxim Bike riders in Kupang City showed that 9 riders (64.28%) who complaints of CTS such as tingling and pain in the palms. The purpose of this study was to find out a picture of CTS events based on age, gender, length of service, length of work, repetitive movements, grasping work, and awkward postures on the wrists of Maxim Bike riders in Kupang City. This research is a type of descriptive quantitative research. The population in this study was all Maxim Bike riders in Kupang City totaling 204 people. The sample in this study was 66 people and the sampling used a simple random sampling technique. Has a result of the study showed that there were 49 people (74.2%) who were CTS positive and 17 people (25.8%) negative for CTS. The age at risk (≥ 40 years) is at the largest frequency of CTS positive, which is 34 people (51.5%). Men were at the largest frequency of CTS positives at 40 people (60.6%). Women are at the largest proportion of CTS at 75%. Long service life (≥ 3 months) was at the largest frequency of CTS positive as many as 38 people (57.6%). Length of work risky (≥4 hours / day), repetitive movements ≥ 30 times / minute, work of holding firmly, awkward posture on the wrists were each at the largest frequency of CTS positive as many as 49 people (74.2%). It is recommended to Maxim Bike riders in Kupang City to stretch their hands every time they finish work and conduct regular health checks so as to prevent CTS incidents.
***Keywords**: Carpal Tunnel Syndrome (CTS); Online Motorcycle Taxi; Maxim Bike*

ABSTRAK

Pengendara ojek *online* adalah salah satu pekerjaan yang berisiko mengalami CTS karena postur pergelangan tangan yang lama di stang motor. Hasil studi pendahuluan kepada 14 pengendara Maxim *Bike* di Kota Kupang menunjukkan bahwa terdapat 9 pengendara (64,28%) yang mengalami keluhan CTS seperti kesemutan dan nyeri pada telapak tangan. Tujuan dari penelitian ini adalah mengetahui gambaran kejadian CTS berdasarkan umur, jenis kelamin, masa kerja, lama kerja, gerakan berulang, pekerjaan menggenggam, dan postur janggal pada pergelangan tangan pengendara Maxim *Bike* di Kota Kupang. Penelitian ini merupakan jenis penelitian kuantitatif deskriptif. Populasi dalam penelitian ini adalah seluruh pengendara Maxim *Bike* di Kota Kupang berjumlah 204 orang. Sampel dalam penelitian ini berjumlah 66 orang dan pengambilan sampel menggunakan teknik *simple random sampling*. Hasil penelitian menunjukkan bahwa terdapat 49 orang (74,2%) yang positif CTS dan 17 orang (25,8%) negatif CTS. Umur berisiko (≥ 40 tahun) berada pada frekuensi terbesar positif CTS yaitu sebanyak 34 orang (51,5%). Laki-laki berada pada frekuensi terbesar positif CTS yaitu sebanyak 40 orang (60,6%). Perempuan berada pada proporsi terbesar CTS yaitu 75%. Masa kerja lama (≥ 3 bulan) berada pada frekuensi terbesar positif CTS sebanyak 38 orang (57,6%). Lama kerja berisiko (≥4 jam/hari), gerakan berulang ≥ 30 kali/menit, pekerjaan menggenggam secara kuat, postur janggal pada pergelangan tangan masing-masing berada pada frekuensi terbesar positif CTS sebanyak 49 orang (74,2%). Disarankan kepada para pengendara Maxim *Bike* di Kota Kupang untuk melakukan peregangan tangan setiap selesai bekerja dan melakukan pemeriksaan kesehatan secara rutin sehingga dapat mencegah kejadian CTS.
Kata Kunci: *Carpal Tunnel Syndrome* (CTS); Ojek *Online*; Pengendara Maxim

INTRODUCTION

Carpal Tunnel Syndrome (CTS) is the most common trap neuropathy that occurs in the wrist due to pressure on the median nerve when going through the carpal tunnel karpal[(1)]. CTS has symptoms such as numbness, tingling, weakness and pain in the hands caused by pressure on the median nerve present in the wrist and commonly occurs in the thumb, index finger, middle finger, and part of the ring

finger[2]. The number of activities that use hands with a fairly long time span is often associated with the incidence of CTS[3].

Data from the International Labour Organization (ILO) in Nurdasari & Ariasih[4], shows that CTS is almost always found in every case of occupational diseases in several countries. In 2010 in China there was an increase in the number of CTS cases due to work by approximately 30% compared to 2001. The incidence rate of CTS is about 90% of various other neuropathies. Every year the incidence of CTS reaches 267 out of 100,000 population with a prevalence of 9.2% in women and 6% in men. In the UK, the incidence rate is 6%-17% which is higher than america's 5%. CTS occurs a lot in the age range of 40-60 years[5]. In Indonesia, the prevalence of occupational CTS is not yet known because there are still very few occupational disease diagnoses reported. Research on high-risk work using the wrist and hand was obtained with a prevalence of CTS between 5.6% and 15%[6].

CTS includes common work-related disorders. Occupational Safety and Health Administration (OSHA) data in Nurdasari & Ariasih[4], reports that CTS cases in workers occur around 900,000 cases / year. Work with activities such as repetitive movements and awkward positions over a long period of time has the potential to cause CTS because it affects the nerves as well as the blood supply to the wrist[7]. CTS can cause disability in workers because in addition to causing pain, it can also limit the functions of the wrist and hands so that it affects daily work[8]. CTS must be addressed immediately before it is too late because it has the potential to result in hand paralysis which can be a big problem for humans, because most of the activities carried out by humans are by hand[7].

Online motorcycle taxi riders are one type of work that can experience CTS due to too long wrist posture on the handlebar of the motorcycle, so it is included in the CTS risk group. Higher prevalence rates in solarts have been found in certain groups with repetitive hand gestures, especially flexion and extension. These factors certainly represent a job as a motorcycle taxi driver[9]. In working, the rider will adjust the speed of the motor (increase or decrease gas flow) through the gas handlebar using the right hand and adjust the brake or clutch using the left hand. The continuously repeated bending and holding movements accompanied by vibrations from the motor engine or vibrations from potholes can lead to risk factors for the occurrence of CTS[10].

Based on previous research conducted by Farhan & Kamrasyid[11] on 96 motorcycle taxi drivers in Kramat Jati District, there were 72 respondents (75%) who experienced CTS complaints. Complaints are in the form of pain, tingling, stiffness and numbness. The results of a study from Kinanti[12] on 120 online motorcycle taxis at the Depok Baru Station Shelter, there were 92 (76.7%) respondents who experienced symptoms of CTS. In a study by Nurdasari & Ariasih[4] on 113 online motorcycle taxi drivers in South Tangerang City, there were also 87 respondents (77%) who experienced CTS complaints.

Maxim is one of online motorcycle taxi service providers that has existed since 2003 and only reached the Indonesian market in 2018 by opening an office in Jakarta. Until now, there are many

Maxim Bike riders who are actively working along the streets of Kupang City to serve pick-up and drop-off services for passengers, goods, and food. The results of a preliminary study that researchers have conducted on 14 Maxim Bike online motorcycle taxi riders, there were 9 riders (64.28%) who experienced CTS complaints such as tingling and pain in the palms. This type of research is a descriptive study to describe the incidence of carpal tunnel syndrome in Maxim Bike riders in terms of age, gender, length of work, length of work, repetitive movements, grasping work, and awkward posture on the wrist

METHOD

Type of research is descriptive quantitative with survey design. This research was conducted in Kupang City starting from February to June 2022. The population was all Maxim Bike riders in Kupang City totaling 204 people. The number of samples in this study was 66 Maxim Bike riders in Kupang City taken using a simple random sampling technique. Data collection using questionnaires. The data analysis used in this study is a descriptive data analysis that aims to describe the characteristics of each variable studied. This research has been declared to have passed the ethics review by the Health Research Ethics Commission of the Faculty of Public Health, Nusa Cendana University with Number: 2022127-KEPK.

RESULT AND DISCUSSION

Basen on result, it is known that description of the characteristics of the research respondents as a follow on tabel 1.

Table 1. Distribution of Respondents Maxim Bike Rider Characteristics in Kupang City 2022

Variable	n=66	%
CTS Incidents		
Positive	49	74,2
Negative	17	25,8
Age Group		
Not at Risk: < 40 years old	31	47
At risk: ≥ 40 years old	35	53
Gender		
Man	54	81,8
Woman	12	18,2
Service Life		
New : < 3 months	25	37,9
Duration : ≥ 3 months	41	62,1
Length of Work		
No Risk : < 4 hours/day	16	24,2
Risk : ≥ 4 hours/day	50	75,8
Repetitive Movements		
≥ 30 times/minute	65	98,5
<30 times/min	1	1,5
The Work of Grasping Firmly		
Yes	66	100

Variable	n=66	%
Not	0	0
Awkward Posture On The Wrist		
Yes	66	100
Not	0	0

Table 1 showed that out of 66 respondents, there were 49 people (74.2%) who were CTS positive. The highest age group was in the risk category (≥ 40 years) with 35 people (53%). The most gender was male, which was 54 people (81.8%) compared to the female sex only 12 people (18.2%). The highest frequency of service was in the old working period group (≥ 3 months) of 41 people (62.1%) compared to the new working period group (< 3 months) which was only 25 people (37.9%). The long-time group of work at risk (≥4 hours / day) had the highest frequency of 50 people (75.8%). There were 65 people (98.5%) who performed repetitive movements ≥ 30 times/minute, while only 1 person (1.5%) performed repetitive movements <30 times/minute. All 66 people (100%) did the work of grasping firmly. All 66 respondents (100%) had an awkward posture on the wrist while working.

Table 2. Distribution of *Carpal Tunnel Syndrome* Incidents Based on Variables Studied on Maxim Bike Riders in Kupang City in 2022

Variable	*Carpal Tunnel Syndrome* (CTS)				Total	%
	Negative	%	Positive	%		
Age Group						
Not at Risk: < 40 years old	16	24,2	15	22,7	31	47
At risk: ≥ 40 years old	1	1,5	34	51,5	35	53
Gender						
Man	14	21,2	40	60,6	54	81,8
Woman	3	4,5	9	13,6	12	18,2
Service Life						
New : <3 months	14	21,2	11	16,7	25	37,9
Duration : ≥ 3 months	3	4,5	38	57,6	41	62,1
Length of Work						
No risk: <4 hours/day	16	24,2	0	0	16	24,2
Risk: ≥ 4 hours/day	1	1,5	49	74,2	50	75,8
Repetitive Movements						
≥ 30 times/minute	16	24,2	49	74,2	65	98,5
<30 times/min	1	1,5	0	0	1	1,5
The Work of Grasping Firmly						
Yes	17	25,8	49	74,2	66	100
Not	0	0	0	0	0	0
Awkward Posture On The Wrist						
Yes	17	25,8	49	74,2	66	100
Not	0	0	0	0	0	0

Table 2 showed that the age group at risk (≥ 40 years) was at the largest frequency of CTS positives, namely 34 people (51.5%) compared to the non-risk age group (< 40 years) which was only 15 people (22.7%). Men were at the largest frequency of CTS positives at 40 people (60.6%) compared to women at only 9 people (13.6%). The largest proportion of CTS incidence was in the female sex,

which was 75% compared to men which was only 74.07%. The old working period group (≥ 3 months) was at the largest frequency of CTS positive as many as 38 people (57.6%), while the new working period group (<3 months) who were CTS positive was 11 people (16.7%). The long-time group at risk (≥4 hours/day) was at the largest frequency of CTS positive at 49 people (74.2%), while none of the people (0%) of the long-working group were not at risk of <4 hours/day) who were CTS positive. The repetitive movement group ≥ 30 times/minute was at the largest frequency of CTS positive at 49 people (74.2%), while none of the people (0%) of the repetitive movement group <30 times/minute were CTS positive. Strong grasping work was at the largest frequency of CTS positives at 49 people (74.2%), while none of the people (0%) who did not do the work of firmly grasping were CTS positive. This is because all respondents grasped the work object firmly while working. The awkward posture on the wrist was at the largest frequency of CTS positive at 49 people (74.2%), while none of the people (0%) who did not have an awkward posture on the wrist who was CTS positive. This is because all respondents have an awkward posture on the wrist when working in the form of flexions and extensions.

1. Overview of the Carpal Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders in Kupang City

Carpal Tunnel Syndrome (CTS) is defined as a collection of several symptoms caused by compression in the *medianus nervus* (forearm nerve) in the *carpal tunnel* (carpal tunnel) in the wrist[13]. Online motorcycle taxi riders are one type of work that can experience CTS due to too long wrist posture on the motorcycle handlebar, so they are included in the CTS risk group[9]. In working, the rider will adjust the speed of the motor (increase or decrease gas flow) through the gas handlebar using the right hand and adjust the brake or clutch using the left hand. The continuously repeating bending and holding movements accompanied by vibrations from the motor engine or vibrations from potholes can lead to risk factors for the occurrence of CTS[10].

The results of the study using a development questionnaire by Levine *et al* (1993) from *the Boston Carpal Tunnel Questionnaire* (BCTQ) and a physical test in the form of *a Phalen's Test* in this study showed that of the 66 Maxim Bike riders in Kupang City, there were 49 people (74.2%) who were included in the CTS positive category and 17 people (25.8%) who were included in the negative category of CTS. The most common complaints experienced by motorists are pain in the palms and wrists and tingling in the fingers. This is usually felt by the rider when riding the motorcycle for too long because of chasing orders. The flexibility of existing working hours also supports the riders to be able to work as freely as possible without any time limit so that the higher the frequency of riding a motorcycle. The complaints felt by motorists are often ignored because they feel that they are used to happening and will disappear on their own.

The results of this study are in line with a study conducted by Farhan & Kamrasyid[11] on 96 motorcycle taxi drivers in Kramat Jati District, there were 72 respondents (75%) who experienced CTS

complaints. Complaints are in the form of pain, tingling, stiffness and numbness. In the results of a study from Kinanti[12] on 120 online motorcycle taxis at the Depok Baru Station Shelter, there were 92 (76.7%) respondents who experienced symptoms of CTS. In addition, the results of a study by Nurdasari & Ariasih[4] on 113 *online* motorcycle taxi drivers in South Tangerang City also had 87 respondents (77%) who experienced CTS complaints.

2. Overview of Carpal Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders Based on Age

Age is one of the risk factors that influence the incidence of CTS. Increasing age can increase the risk of CTS[14,15]. This study showed results that the largest frequency of positive events of CTS was in the at-risk age group (≥ 40 years) which was 34 people (51.5%) compared to the non-risk age group (< 40 years) which was only 15 people (22.7%). This data shows that the incidence of CTS is more experienced by the at-risk age group (≥40 years), according to the statement of Zyluk & Puchalski in Nandini et al[16] that the incidence of CTS with the highest number of sufferers is in the age range of 40-65 years and according to *the National for Occupational Safety and Health* (NIOSH) in Sitompul[14], where the age at risk of developing CTS is 40-60 years. The older a person is, the *synovial* fluid will decrease so that it can cause swelling of the joints (15). The results of this study are in line with the research of Nadhifah et al.[17] namely that of the 49 respondents who experienced CTS complaints, the most were respondents aged ≥ 40 years, namely 33 people.

3. Overview of Carpal Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders Based on Gender

Gender is the difference between women and men biologically from birth. This study showed the results that the frequency of CTS positive events was greatestly experienced by men as many as 40 people (60.6%), while in women only as many as 9 people (13.6%). This is due to the number of male respondents who dominate more than women because the population of Maxim Bike riders in Kupang City is mostly male. The male riders work longer than the female riders because the female riders are more easily tired. In addition, currently Maxim Bike riders who are female are more involved in Maxim promotional activities such as distributing brochures in public places, thereby reducing the working hours of female riders.

The results of this study are in line with Fitriani's research[18] where men have the largest frequency of CTS incidence, namely 38 male respondents who experienceD CTS compared to female respondents, namely only 28 people experienced CTS. This study also showed results that the largest proportion of CTS incidence was in the female sex group, which was 75% compared to men who had a proportion of CTS incidence of 74.07%. This is in accordance with the statement of Tana et al.[19] that women have a three times greater risk of developing CTS than men because of the narrower size of the carpal tunnel in women and the influence of estrogen that women have.

4. Overview of Carpal Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders Based On Work Period

Length of service is one of the factors that can support the emergence of disorders caused by work. With an increase in the period of work on the hands indicates the presence of repeated work performed by the hands over a long period of time , with an increase in the number of years of work indicating a higher risk for the occurrence of *Carpal Tunnel Syndrome*[20].

This study showed the results that the old working period group (≥ 3 months) was at the largest frequency of CTS positive as many as 38 people (57.6%), while the new working period group (<3 months) who were CTS positive was 11 people (16.7%). This short rider's working life is due to the fact that Maxim Company only entered Kupang City in December 2021. Even though it has a short working life, Maxim Bike riders are diligent in receiving orders because Maxim Bike fares are the cheapest among other *online* motorcycle taxi *platforms*, making riders flooded with orders every day. The absence of flexibility in working time also makes motorists free to work without time restrictions, so many motorists work from morning to late at night. The longer the rider works, the more it improves repetitive movements, awkward postures, and stronger grasping work. The results of this study are in line with the research of Mochamad Bahrudin et al.[21] which states that there is a correlation between the length of service and the incidence of CTS where the longer the service period, the greater the number of CTS events.

5. Overview of Carpal Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders Based On Length of Work

Length of work is the length of time the respondent worked in one day (unit hours). The extension of working time that exceeds the ability of workers is often not followed by the onsetof high work efficiency,but on the contrary it can have an impact on work productivity to decrease and the appearance offatigue, occupational diseases, and work accidents[13]. In Table 1, it can be seen that most Maxim riders in Kupang City have a risky length of work (≥ 4 hours / day) which is as many as 50 people (75.8%) compared to riders who have a non-risky length of work (< 4 hours / day) which is only 16 people (24.2%). This is because the riders have the flexibility of working time so that they are free to work without time restrictions. Many riders make Maxim Bike the main job so they work from morning to late at night. In addition, maxim bike prices are the cheapest at the moment compared to other *online* motorcycle taxi *platforms* in Kupang City, making riders flooded with orders every day, increasing work interest and making riders work harder without paying attention to time.

This study showed the results that the largest frequency of CTS positive events was in Maxim Bike riders with a working period of ≥ 4 hours / day (at risk) which was 49 people (74.2%), while none of the riders (0%) with a working period of < 4 hours / day (not at risk) were CTS positive. This data

shows that the incidence of CTS is more experienced by workers with a risky length of work (≥ 4 hours / day), according to the statement of Sekarsari et al[5] that the length of work ≥ 4 hours in workers is at risk of the onset of CTS. The increased risk of CTS is in line with the increase in length of work. The longer the working time will cause the repetition of *finger movements* to become longer and longer. The results of this study are in line with the research of Hartanti et al[22] where out of 40 respondents, there were 25 respondents with a length of work ≥ 4 hours / day who experienced CTS complaints and the remaining 15 respondents with a < length of work of 4 hours / day who did not experience CTS complaints. In addition, research by Nurdasari & Ariasih[4] shows the results that length of work is the most dominant variable or affects the incidence of CTS.

6. Overview of Carpal Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders Based on Repetitive Movements

Repeated movements of the hands, wrists or fingers are one of the physical load factors that affect the risk of CTS, where the higher the frequency of repetitive movements, the higher the risk of CTS[14]. Repetitive movements can cause the tendon muscles to become tired and tense. Repetition of movements with increasingly high frequencies can increase the risk of CTS events[23].

In table 1, it can be seen that out of 66 respondents, there were 65 people (98.5%) who performed repetitive movements ≥ 30 times / minute, while only 1 person (1.5%) performed repetitive movements <30 times / minute. This is because when riding a motorcycle, motorists must make as many repetitive movements as possible in the form of *flexions* and *extensions* to adjust the speed of the motorbike (pulling and releasing gas), as well as bending movements to adjust the front and rear brakes on the brake handlebar due to the congestion of vehicles and traffic in Kupang City. In addition, when passing through damaged or potholed roads, the motorist must still control the speed of the motorbike adjusted to road conditions so as not to endanger himself, passengers, and others.

This study showed that the largest frequency of CTS positive events was in Maxim Bike riders with repeated movements ≥ 30 times / minute, namely 49 people (74.2%), while none of the riders (0%) with repeated movements < 30 times / minute who were CTS positive. This data shows that CTS events are more experienced by workers with repetitive movements ≥ 30 times / minute, according to the statement of Kurniawan et al[24] that a high frequency of repetitive movements >30 times the movement per minute at work will cause CTS. The results of this study are in line with Lestaluhu's research[25] where out of 80 respondents, there were 64 respondents (80.6%) with repeated work ≥ 30 times / minute who were at risk of developing CTS, while only 16 people (19.4%) with repetitive work < 30 times / minute were not at risk of developing CTS.

7. Overview of Carpal Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders Based on Strong Grasping Work

Grasping the object (tool) with force causes pressure on the flexor of the tendon of the finger and can result in pressure on the carpal tunnel[15]. In table 1, it can be seen that the entire repondent amounted to 66 people (100%) doing the work of grasping firmly and there were no people (0%) who did not do the work of grasping firmly. This is because when riding a motorcycle, all Maxim Bike riders must grasp the steering wheel / handlebar of the motorcycle firmly so that it does not fall easily. When passing through potholes, sandy, uneven roads, or muddy roads, the driver must add a little strength to grasp the steering wheel / handlebar of the motorbike so that the motorbike remains stable.

This study showed the results that out of 66 respondents, the largest frequency of CTS positive events was in Maxim Bike riders with strong grasping work, namely 49 people (74.2%). This data shows that the incidence of CTS is more experienced by workers with strong grasping work, according to Sitompul's statement[14] that work with manpower / strength on the hands will increase the risk of CTS. The occurrence of direct pressure on soft muscle tissue. For example, when the hand has to hold the tool, the soft muscle tissue of the hand will receive pressure directly from the handle of the tool, and if this happens frequently, it can cause persistent muscle pain. The results of this study are in line with Lestaluhu's research[25] where out of 80 respondents, there were 66 respondents (82.5%) with strong grasping work at risk of developing CTS, while only 14 people (17.5%) with non-strong grasping work were not at risk of developing CTS.

8. Overview of Tunnel Syndrome (CTS) Incidence in Maxim Bike Riders Based on Awkward Posture on the Wrist

Postures of the hand and wrist regions including ulnar deviation, radial deviation of *the wrist flexion* or *extension* are postures that are at risk of CTS events[14]. Deviations in the posture of the wrist will reduce the worker's ability to hold tightly and the clamping strength decreases. In Table 1. it can be seen that all 66 respondents (100%) had awkward postures on the wrists while working and none (0%) who did not have awkward postures on the wrists while working. This is because when riding a motorcycle, all Maxim Bike riders make deviations in the posture of the hands such as *flexion* and *extension* when adjusting the speed of the motor (pulling and releasing gases). Especially when going through a damaged or pothole road, the frequency of *flexion* and *extension* movements carried out will increase to maintain the balance of the motor. In addition, when going through the road around Kupang City, motorists often have to make repetitive movements to adjust the gas with an awkward posture in the form of *flexion* and *extension* due to the density of vehicles and traffic.

This study showed results that out of 66 respondents, the largest frequency of CTS positive events was in Maxim Bike riders with awkward postures on the wrists, namely 49 people (74.2%). This data shows that the incidence of CTS is more experienced by workers with awkward postures on the wrists, according to the statement of Agustin et al.[26] that awkward postures (*flexion* and *extension*) for a duration of >10 seconds and 30 times repeatedly in one minute if maintained continuously will cause

musculoskeletal complaints on the hands, in addition to the awkward wrist posture also shows four times greater risk for the occurrence of CTS. The results of this study are in line with the research of Sekarsari et al.[5] which states that there is a significant relationship between awkward posture on the hands and CTS complaints where from the results of his study of 64 respondents, there were 41 respondents with awkward postures on the wrists who experienced CTS complaints, while only 23 people with non-awkward postures on the wrists did not experience CTS complaints.

CONCLUSION

Most of the maxim bike rider in Kupang were CTS positive with at-risk age group (≥ 40 years) Based on the gender, most of them are male, with long service period group is more than 3 months. The length of work is risk category with more than 4 hours/day, with repeated movements is up to 30 times/minute. Based on the work of firmly grasping on Maxim Bike riders in Kupang City, the group of strong gripping jobs is at the largest frequency of CTS positive. Based on the awkward posture on the wrist of a Maxim Bike rider in Kupang City, the group of awkward postures on the wrist is at the largest frequency of CTS positive. It is recommended to Maxim Bike riders to stretch their hands every time they finish work and conduct regular health checks so as to prevent CTS incidents

REFERENCE

1. Lalupanda EY, Rante SDT, Dedy MAE. Hubungan Masa Kerja dengan Kejadian Carpal Tunnel Syndrome Pada Penjahit Sektor Informal di Kelurahan Solor Kota Kupang. Cendana Med J. 2019;18(3):441–9.
2. Jehaman I, Julintina M, Ginting LRB, Berampu S. Hubungan Masa Kerja dan Sikap Kerja Dengan Keluhan Carpal Tunnel Syndrome Pada Pekerja Penenun Ulos di Galeri Ulos Sianipar Medan Tahun 2020. J Keperawatan dan Fisioter. 2021;3(2).
3. Chairunnisa S, Novianus C, Hidayati. Faktor-Faktor Yang Berhubungan Dengan Gejala Carpal Tunnel Syndrome Pada Komunitas Ojek Online di Kota Tangerang Selatan Tahun 2021. J Fisioter dan Kesehat Indones. 2021;1(2):1–13.
4. Nurdasari A, Ariasih RA. Faktor-Faktor yang Berhubungan dengan Potensial Kejadian Carpal Tunnel Syndrome (CTS) pada Pengendara Ojek Online di Kota Tangerang Selatan. J Semesta Sehat. 2021;1(1):10–7.
5. Sekarsari D, Pratiwi AD, Farzan A. Hubungan Lama Kerja, Gerakan Repetitif Dan Postur Janggal Pada Tangan Dengan Keluhan Carpal Tunnel Syndrome (CTS) Pada Pekerja Pemecah Batu Di Kecamatan Moramo Utara Kabupaten Konawe Selatan Tahun 2016. JIMKESMAS J Ilm Mhs Kesehat Masy. 2017;2(6):184961.
6. Putra DK, Setyawan A, Zainal AU. Faktor Yang Berhubungan Dengan Gejala Carpal Tunnel Synrome (CTS) Pada Pekerja Komputer Bagian Editing Di Pt . X Tahun 2021. Environ Occup Heath Saf J. 2021;2(1):11–8.
7. Lazuardi AI. Determinan Gejala Carpal Tunnel Syndrome (CTS) Pada Pekerja Pemecah Batu (Studi Pada Pekerja Pemecah Batu di Kecamatan Sumbersari dan Sukowono Kabupaten Jember). Universitas Jember; 2016.
8. Wulandari E, Widjasena B, Kurniawan B. Hubungan Lama Kerja, Gerakan Berulang dan Postur Janggal Terhadap Kejadian Carpal tunnel syndrome (CTS) Pada Pekerja Tahu Bakso (Studi Kasus Pada Pekerja Tahu Bakso Kelurahan Langensari , Ungaran Barat). J Kesehat Masy. 2020;8(6):826–31.

9. Nurdasari A. Faktor-Faktor Yang Berhubungan Dengan Potensial Kejadian Carpal Tunnel Syndrome (CTS) Pada Pengendara Ojek Online di Kota Tangerang Selatan Tahun 2019. Universitas Muhammadiyah Jakarta; 2019.
10. Syahputra MR. Sebaran Kejadian Carpal Tunnel Syndrome Berdasarkan Boston Carpal Questionnaire Pada Pengendara Ojek Online di Kota Palembang. Universitas Sriwijaya; 2020.
11. Farhan FS, Kamrasyid AA. Faktor-faktor yang Mempengaruhi Timbulnya Carpal Tunnel Syndrome Pada Pengendara Ojek. J Manaj Kesehat Yayasan RS Dr Soetomo. 2018;4(2):123–33.
12. Kinanti Y. Analisis Faktor Risiko Gejala Carpal Tunnel Syndrome Pada Pengendara Ojek Daring di Shelter Stasiun Depok Baru Tahun 2019. Universitas Pembangunan Nasional "Veteran" Jakarta; 2019.
13. Sabila CI. Karakteristik Individu dan Faktor Pekerjaan dengan Keluhan Carpal Tunnel Syndrome (CTS) Pekerja bagian Repair Veneer (Studi di CV. Anugerah Alam Abadi Bondowoso) [Internet]. Skripsi. Universitas Jember; 2019. Tersedia pada: https://respository.unej.ax.id
14. Sitompul YRB. Resiko Jenis Pekerjaan Dengan Kejadian Carpal Tunnel Syndrome (CTS). J Ilm WIDYA. 2019;5(3):1–7.
15. Mukhlisa AN. Gambaran Risiko Kejadian Carpal Tunnel Syndrome (CTS) Pada Pekerja Wanita di PT. Bogatama Marinusa Makassar. Universitas Islam Negeri Alauddin Makassar; 2014.
16. Nandini RF, Lestari M, Novrikasari, Andarini D, Camelia A, Fujianti P. Carpal Tunnel Syndrome Complaints in Female Packing Workers. J Kesehat Masy. 2022;17(3):354–61.
17. Nadhifah J, Hartanti RI, Indrayani R. Keluhan Carpal Tunnel Syndrome pada Pekerja Sortasi Daun Tembakau (Studi di Gudang Restu I Koperasi Agrobisnis Tarutama Nusantara Jember). J Kesehat. 2019;6(1):18–26.
18. Fitriani RN. Faktor-Faktor Yang Berhubungan Dengan Dugaan Carpal Tunnel Syndrome (CTS) Pada Operator Komputer Bagian Sekretariat di Inspektorat Jendral Kementerian Pekerjaan Umum Tahun 2012. Universitas Islam Negeri Syarif Hidayatullah Jakarta; 2012.
19. Tana L, Halim FS, Delima, Ryadina W. Carpal Tunnel Syndrome Pada Pekerja Garmen di Jakarta. Bul Penel Kesehat. 2004;32(2):73–82.
20. Ali KM, Sathiyasekaran BWC. Computer Professionals and Carpal Tunnel Syndrome (CTS). Int J Occup Saf Ergon. 2006;12(3).
21. Bahrudin M, Putra RL, Sultana, Alief HF. Hubungan Masa Kerja Dengan Kejadian CTS Pada Pekerja Pemetik Daun Teh. Saintika Med. 2016;12(1):24.
22. Hartanti HF, Asnifatima A, Fatimah A. Faktor Risiko yang Berhubungan dengan Keluhan Carpal Tunnel Syndrome pada Pekerja Operator Komputer Bagian Redaksi di Harian Metropolitan Bogor Tahun 2018. Promot J Mhs Kesehat Masy [Internet]. 2018;1(1):68–73. Tersedia pada: http://ejournal.uika-bogor.ac.id/index.php/PROMOTOR/article/view/1430
23. Yagev Y, Gringolds M, Karakis I, Carel RS. Carpal Tunnel Syndrome : Under-recognition of Occupational Risk Factors by Clinicians. Ind Health. 2007;820–2.
24. Kurniawan B, Jayanti S, Setyaningsih Y. Faktor Risiko Kejadian Carpal Tunnel Syndrome (CTS) pada Wanita Pemetik Melati di Desa Karangcengis, Purbalingga. J Promosi Kesehat Indones. 2008;3(1):31–7.
25. Lestaluhu I. Gambaran Faktor Risiko Kejadian Carpal Tunnel Syndrome Pada Pekerja Wanita Pengupas Kepiting di PT. Kemilau Bintang Timur Makassar Tahun 2017. Universitas Islam Negeri Alauddin Makassar; 2017.
26. Agustin CPM, Mardiana, Budiono I. Hubungan Masa Kerja dan Sikap Kerja Dengan Kejadian Sindrom Karpal Pada Pembatik CV. Pusaka Beruang Lasem. Unnes J Public Heal. 2014;3(4):74–80.