

PREVALENCE OF HEPATITIS C VIRUS INFECTION AND ASSOCIATED RISK FACTORS IN LONG DISTANCE TRUCK DRIVERS IN LAHORE

Abdul Majeed Akhtar¹, Sadia Majeed², Muhammad Jameel Akhter³

¹Punjab Provincial TB Control Program, Directorate of General Health Services Punjab, Lahore,

²College of Home Economics, Gulberg, Lahore,

³Out Patient Diagnostic and Research Laboratory Mayo Hospital, Lahore Pakistan

Corresponding Author: Abdul Majeed Akhtar, Email Address: abdulmajeedakhtar@gmail.com

ABSTRACT: *Hepatitis C infection has emerged as a major public health problem all over the world and it is rapidly spreading in developing countries including Pakistan. There is a lack of information about the prevalence of Hepatitis C infection in various socio-economic classes of Pakistan, especially long route truck drivers. Truck drivers have to travel long ways for their earnings and have to live apart from their families in Pakistan. Due to a lack of awareness and unhygienic conditions, there are chances of high prevalence of several infectious diseases like Hepatitis C in them. The aim of the current study was to check the seroprevalence of Hepatitis C infection in long distance truck drivers in Lahore metropolitan. 68 long route truck drivers from main truck stands of Lahore metropolitan were selected, questioned about their life style and screened for HCV infection. 14.7% were found positive for anti-HCV infection, which is higher than the general prevalence of HCV infection in Pakistan. All HCV positive long route truck drivers were married, 39 years was found to be the mean age and majority have multiple sex partners. So it is concluded that HCV infection is prevalent in long route truck drivers and there is a need to increase awareness and education about HCV infection in long route truck drivers.*

Key words: HCV infection, Truck drivers, prevalence, Lahore

INTRODUCTION

Viral hepatitis has emerged as a serious public health problem around the globe affecting billions of people annually [1]. It is caused mainly by hepatitis viruses A, B, C, D and E. Hepatitis C virus can lead to life-threatening illnesses including acute and chronic hepatitis, liver cirrhosis and hepatocellular carcinoma [2]. This infection is often asymptomatic but it can lead to advanced liver cirrhosis and ultimately cirrhosis. It is estimated that 80% of acutely infected individuals develop chronic infection later in life [3]. WHO estimates that on average 3.3% of the world population is infected with HCV while 3 to 4 million people are diagnosed as new cases every year [4]. HCV contains a high degree of genetic variation. Phylogenetic analysis reveals identification of 6 genotypes each comprising multiple subtypes. These genotypes are important to study because they contain distinct geographical distributions and information on their distribution patterns will be helpful in understanding of effective molecular and epidemiological surveillance [5].

It is observed that truck drivers usually live apart from their families for longer periods of time. Their lifestyle usually favors the reception of different blood-borne pathogenic diseases due to unprotected sex with commercial sex workers, illicit drug use, shaving at different places and with non-sterile razors etc [6]. They are also one of the main sources of transmission of disease from one area to another. Length of profession, time away from home and family and history of sexually transmitted diseases are important factors associated with this disease [7]. In spite of all these risk factors, a very few investigations on HCV infection have been carried out in this population in Pakistan. 18.9% prevalence of HBV among long distance truck drivers has been reported in Brazil [8].

The aim of the current study was to investigate prevalence and risk factors associated with HCV infection in long distance truck drivers in Pakistan.

METHADODOLOGY

The present cross-sectional and community-based study was conducted to estimate the prevalence of HCV and to investigate the risk factors associated with HCV infection in long route truck drivers in Lahore during 2012. A total of 68 long route truck drivers were selected from various truck stands of Lahore Metropolitan city including Lahore General Truck stand, truck stand old sabzi mandi, Jinnah truck terminal and Niazi Bus stand Yateem khana chowk. To find out the associated risk factors like marital status, qualification, area of travelling, per month income, cleanliness of the staying area, personal hygiene, unprotected sexual habits, under gone any surgery, any tattoo on the body and blood transfusion, a pre-tested questionnaire was filled from all the enrolled truck drivers. The study was approved by the advanced studies and research board of the University of Veterinary and Animal Sciences, Lahore. Furthermore, an informed consent was taken from all the participants of the study.

Sampling Frame:

68 long route truck drivers from above mentioned truck stands who were willing to enroll in this.

Immunological Assays:

All the serum samples were subjected to ELISA for HCV antibody detection by third generation ELISA Kit (ETI-AB-HCVK-4, Diasorin S.P.A. Italy) containing 96 wells was used for Enzyme Linked Immunosorbent Assay [9]. The concentration of anti-HCV present in the specimen was measured by spectrophotometer (Labsystem Multiskan Biochromatic).

Statistical analysis:

The data was analyzed statistically by using SPSS (version 16.0). All the quantitative data was presented in the form of frequency, percentage and mean \pm S.D. For quantitative data *t*-test for independent sample was used for analytical statistics.

Chi-square test was used to analyze the qualitative data. A P -value < 0.05 and Odds Ratio (OR) with 95% Confidence Interval (CI) was used to see the magnitude of dependency on various risk factors.

RESULTS

	Anti Hepatitis C Virus		Total
	Reactive (Positive)	Non-Reactive (Negative)	
Number (%)	10 (14.70%)	58 (85.30%)	68
Mean (Age)	39.60	35.27	37.03
Std. Deviation	9.370	15.11	14.59
(Independent sample t-test) p-value = 0.675 Insignificant at 5% α Level			

A total of 68 long route truck drivers were selected and tested for Anti-HCV among these 10 (14.70%) were reactive for Anti-HCV. 39 years was found to be mean age (Table 1). Marital status, qualification, area through which travel, income per month, distance traveled, cleanliness of the hotel where stay, personal hygiene during traveling, sexual contact other than wife, under gone any surgery, any tattoo on the body, blood transfusion was insignificantly associated with Anti-

HCV status. Ethnicity and Dental procedure was significantly associated with Anti-HCV status. Disinfection of razor by barber, cleanliness of barber shop, Injecting drug user, method

of shave, usage of razor, drugs prescribed by and type of drugs was insignificantly associated with Anti-HCV status. Injury treatment and history of disease for relative was significantly associated with Anti-HCV status. (Table-2 & 3) When truck drivers were asked about utensils sharing all of them told that they share comb, glass and spoon with others while 6 told that they share their towel, 8 told that they share their nail cutter with others and only 2 long route truck driver told that they share their straw, razor and tooth brush with others. According to p-value and Odds ratio no significant relationship was present for utensil sharing for Anti-HCV status (Reactive/Non Reactive). i.e. [Comb Sharing= (p-value > 0.05) (OR) 2.46, Glass Sharing= (p-value > 0.05) (OR) 2.46, Spoon Sharing= (p-value > 0.05) (OR) 3.043, Towel Sharing= (p-value > 0.05) (OR) 0.675, Straw Sharing (p-value > 0.05) (OR) 1.20, Razor Sharing (p-value > 0.05) (OR) 1.20, Nail Cutter (p-value > 0.05) (OR) 0.462, Tooth Brush (p-value > 0.05) (OR) 1.563.] (Table-4.40)

DISCUSSION

Long-route truck drivers for earning purpose usually live away from their homes and families. This lifestyle leads at high risk for various infectious diseases in such population as unsafe and insecure sex with several partners and illegal drugs use for their mental relief [10]. The mentioned factors are proven for HCV so these long route truck drivers are at high risk to have hepatitis C infection [11].

Table-4.38: Distribution of Hepatitis C Virus reactive & Non-reactive Long Route Truck Drivers according to Demographic characteristics from Public

Demographic Characteristics		Anti-Hepatitis C Virus		p-value	ODDS Ratio	Confidence Interval	
		Reactive	Non-Reactive			Lower	Upper
Marital Status	Married	10	49	0.24	5.098*	0.255-101.9	
	Unmarried	0	9				
*Odds ratio was calculated by adding 0.5 in each cell							
Educational Status	Illiterate	10	55	0.812	1.453	0.065-32.32	
	Educated	0	3				
Geographical Status	Punjab	8	9	0.013	12.57	1.19- 131.9	
	Non Punjab	2	49				
Area through which you travel	Punjab	0	1	0.866	-	-	
	Punjab + Sindh	1	4				
	All Provinces	9	53				
Socioeconomic status	5000-10000	10	56	0.833	-	-	
	11000-30000	0	1				
	>40000	0	1				
Distance you travel per Month	1000-5000 Km	2	18	0.105	-	-	
	6000-10000 Km	4	36				
	11000-15000 Km	4	4				

Table-4.39: Summary of association between Hepatitis C and various indicators about Long Route Truck Drivers from Public

Indicators	Response	Anti Hepatitis C Virus		p-value	ODDS Ratio	Confidence Interval	
		Reactive	Non Reactive			Lower	Upper
Cleanliness of the hotel where you stay	Bad	2	8	0.854	-	-	
	Satisfactory	6	42				
	Good	2	8				
Personal Hygiene during Traveling	Bad	2	2	0.241	-	-	
	Satisfactory	8	46				
	Good	0	10				
Sexual Contact Other than wife	Never	10	50	0.677	-	-	
	Occasional	0	6				
	Often	0	2				
Surgery	Major	2	4	0.245	3.2	0.41- 24.4	
	Minor	2	6				
	None	6	48				
Surgical Treatment	Private Sector	0	2	0.022	-	-	
	Public Sector	0	12				
	Not Applicable	10	44				
Got any Tattoo	Yes	2	18	0.617	0.556	0.054-5.70	
	No	8	40				
Blood transfusion	Yes	0	6	0.451	0.839	0.719-0.979	
	No	10	52				
Dental Procedure	Yes	0	28	0.043	0.750	0.582-0.966	
	No	10	30				
Does the Barber Disinfect the Razor	Yes	10	46	0.451	3.043	0.14-62.49	
	No	0	12				
How is the cleanliness of Barber shop	Bad	0	2	0.677	-	-	
	Satisfactory	10	50				
	Good	0	6				
Inject Drug User	Yes	2	22	0.438	0.409	0.040- 4.14	
	No	8	36				
How do you shave	Self	0	10	0.468	-	-	
	Barber	10	44				
	Not Applicable	0	4				
How you use Razor	Single	4	36	0.345	2.45	0.353-17.08	
	Multiple	6	22				
Have you got any Injury Treatment from	Self	2	12	0.006	-	-	
	Local Dispensary	2	30				
	Hospital	2	16				
	No	4	0				

Table-4.40: The effect of sharing utensils and other items by Long Route Truck Drivers from Public

Sn			Anti Hepatitis C Virus		p-value	ODDS Ratio	Confidence Interval	
			Reactive	Non Reactive			Lower	Upper
1	Comb Sharing	Yes	10	48	0.54	2.46*	0.118-51.57	
		No	0	10				
Note: Odds Ratio was calculated by adding 0.5 in each Cell								
2	Glass Sharing	Yes	10	48	0.54	2.46*	0.118-51.57	
		No	0	10				
Note: Odds Ratio was calculated by adding 0.5 in each Cell								
3	Spoon	Yes	10	46	0.451	3.043*	0.1481-62.49	
		No	0	12				
Note: Odds Ratio was calculated by adding 0.5 in each Cell								
4	Towel Sharing	Yes	6	40	0.692	0.675	0.096-4.766	
		No	4	18				
5	Straw Sharing	Yes	2	10	0.881	1.200	0.110-13.14	
		No	8	48				
6	Razor Sharing	Yes	2	10	0.881	1.200	0.110-13.14	
		No	8	48				
7	Nail Cutter	Yes	8	52	0.536	0.462	0.038-5.60	
		No	2	6				
8	Tooth Brush	Yes	2	8	0.717	1.563	0.137-17.78	
		No	8	50				

Manjunath et al in 2002 conducted their research in India on long route truck drivers and found HCV prevalence among them about 43% [12]. They determined the risk factors were low education and unsafe sexual activity. Their results were inconsistent and showed high HCV prevalence as compared with our study. There may be the reason that in our study subjects were not highly involved in extra marital relationship. Gibney et al in 2001 conducted their research on long route truck drivers in Bangladesh and found HCV prevalence about 1% [13].

In this study we found 14.7% HCV prevalence in 68 selected long route truck drivers which is less as compare to Manjunath et al [12] and higher than Gibney et al 2001. The main reason for the low prevalence of HCV infection included in Gibney's study might be the truck drivers not received any injection in their lives while in our study most of the truck drivers received injections as drug therapy. Valway et al 2009 found HCV prevalence among the truck drivers about 21% [14]. Their most of the truck drivers were involved in sex with multiple sex workers, while in our case the truck drivers were not involved in extra marital relationship.

Jin et al in 2010 conducted their research on truck drivers and found HCV prevalence 1.5% [15]. The truck drivers they included in their study were literate and had the knowledge of risk factors responsible for the spread of HCV. While in our case most of the truck drivers were illiterate, which is the main reason of high prevalence in our study.

REFERENCES

- [1] Raptopoulou-Gigi M, Orphanou E, Lalla TH, Lita A. "Prevalence of Hepatitis C Virus Infection in a Cohort of Pregnant Women in Northern Greece and Transmission of Hcv from Mother to Child." *European journal of epidemiology*. **17**(3): 263-266 (2001)
- [2] Waheed Y, Shafi T, Safi SZ, Qadri I. "Hepatitis C Virus in Pakistan: A Systematic Review of Prevalence, Genotypes and Risk Factors." *World journal of gastroenterology: WJG*. **15** (45): 5647. (2009)
- [3] Waqar M, Khan AU, Rehman HU, Idrees M, Wasim M, Ali A, Niaz Z, et al. "Determination of Hepatitis C Virus Genotypes Circulating in Different Districts of Punjab (Pakistan)." *European journal of gastroenterology & hepatology*. **26**(1): 59-64 (2014)
- [4] Akhtar AM, Khan MA, Ijaz T, Maqbool A, Iqbal Z, Rehman A, Majeed S. "Hepatitis C Virus Infection in Pregnant Women in Lahore, Pakistan: An Analytical Cross Sectional Study." *International Journal of Agriculture and Biology*. **16**(1): 160-64 (2014).
- [5] Stoddard MB, Li H, Wang S, Saeed M, Andrus L, Ding W, et al. "Identification, Molecular Cloning, and Analysis of Full-Length Hepatitis C Virus Transmitted/Founder Genotypes 1, 3, and 4." *mBio*. **6**: e02518-14 (2015).
- [6] Zhang X, Chow EPF, Wilson DP, Sun X, Zhao R, Zhang J, Jing J, Zhang L. "Prevalence of Hiv and Syphilis Infections among Long-Distance Truck Drivers in China: A Data Synthesis and Meta-Analysis."

- International Journal of Infectious Diseases*. **17**(1): e2-e7 (2013).
- [7] Brandão ABM, Fuchs SC. "Risk Factors for Hepatitis C Virus Infection among Blood Donors in Southern Brazil: A Case-Control Study." *BMC gastroenterology*. **2**(1): 18 (2002).
- [8] Matos MA, Martins RMB, Franca DDS, Pessoni GC, Ferreira RC, Matos MAD, Brunini SM, *et al.* "Epidemiology of Hepatitis B Virus Infection in Truck Drivers in Brazil, South America." *Sexually transmitted infections*. **84**(5): 386-89 (2008)
- [9] Akhtar AM, Khan MA, Ijaz T, Iqbal Z, Rana MY, Maqbool A, Rehman A. "Seroprevalence and Determinants of Hepatitis-C Virus Infection in Blood Donors of Lahore, Pakistan." *Pakistan Journal of Zoology*. **45**: 1-7 (2013).
- [10] Zou X, Chow EPF, Zhao P, Xu Y, Ling L, Zhang L. "Rural-to-Urban Migrants Are at High Risk of Sexually Transmitted and Viral Hepatitis Infections in China: A Systematic Review and Meta-Analysis." *BMC infectious diseases*. **14**(1): 490 (2014).
- [11] Delany-Moretlwe S, Bello B, Kinross P, Oliff M, Chersich M, Kleinschmidt I, Rees H. "Hiv Prevalence and Risk in Long-Distance Truck Drivers in South Africa: A National Cross-Sectional Survey." *International journal of STD & AIDS*. **25**(6): 428-38 (2014).
- [12] Manjunath JV, Thappa DM, & Jaisankar TJ. Sexually transmitted diseases and sexual lifestyles of long-distance truck drivers: a clinico-epidemiologic study in south India. *International journal of STD & AIDS*. **13**(9): 612-617 (2002).
- [13] Gibney L, Saquib N, Metzger J, Choudhury P, Siddiqui MA, Hassan MS. "Human Immunodeficiency Virus, Hepatitis B, C and D in Bangladesh's Trucking Industry: Prevalence and Risk Factors." *International journal of epidemiology*. **30**(4): 878-84(2001).
- [14] Valway S, Jenison S, Keller N, Vega-Hernandez J, McCree DH. "Risk Assessment and Screening for Sexually Transmitted Infections, Hiv, and Hepatitis Virus among Long-Distance Truck Drivers in New Mexico, 2004–2006." *American journal of public health*. **99**(11): 2063 (2009).
- [15] Jin HT, Anderson AC, Tan WG, West EE, Ha SJ, Araki K, Freeman GJ, Kuchroo VK, Ahmed R. "Cooperation of Tim-3 and Pd-1 in Cd8 T-Cell Exhaustion During Chronic Viral Infection." *Proceedings of the National Academy of Sciences*. **107**(33) 14733-38 (2010)