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Research Article

**STUDY TO KNOW THE PREVALENCE OF HCV INFECTION  
IN PATIENTS OF RURAL AREAS OF SOUTHERN PUNJAB AND  
ITS GENOTYPE**

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**Abstract:**

**Objective:** To evaluate the prevalence of infection with hepatitis C virus (HCV) and its genotypic dispensation in rural areas of Southern Punjab.

**Study Design:** A retrospective study.

**Place and Duration:** The patients attending the free liver clinic located in the rural areas of Southern Punjab for the period of two year from January 2015 to January 2017. The cities include Bahawalpur, Rahim Yar Khan and Multan.

**Methodology:** The patients enrolled in the Free Liver clinic and HCV detection of antibodies (n = 1638) in blood attending the hospital OPD of rural areas of southern Punjab. All patients had antibodies to HCV tested by ELISA. 1022 total patients who tested were having "reactive" antibodies against HCV and were able to economically solve HCV RNA analysis by PCR analyzed their results. 200 total patients also had genotyped and analyzed HCV.

**Results:** FLC patients are more likely to be reactive for anti-HCV antibodies when compared with the volunteer blood donor (-14% vs 15% p = 0.005). In 905/1023 HCV RNA was detected in (88%) patients. Among genotypes that could not be analyzed, 126/167 (76%) had a single genotype and in 7 patients (4%) 3rd type of genotype 1 was detected, only (n = 4) or together.

**Conclusion:** 1 out of 5 volunteers tested in our FLC and in healthy 'volunteer blood donor 14% have HCV antibodies were detected. In our region Genotype 1 is not very common.

**Key words:** Seroprevalence, Hepatitis C, genotype, blood donors.

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**INTRODUCTION:**

Hepatitis C virus (HCV) infection is an important health issue. The WHO suggests that 170 million people worldwide are infected with HCV chronically and every year 3 to 4 million people are infected. In the US prevalence is 15% of acute viral hepatitis, chronic hepatitis in 61-71% and cirrhosis in 50%, liver cancer and end stage liver disease. In our country, it is responsible for 70% of all medical intensive care applications and 68% of mortality. After the first exposure, 61% to 86% develop a chronic phase infection. HCV has six types of genotypes mainly. Although they do not show the infection treatment results, they may affect the treatment outcome and the period of treatment. In general, patients with 2nd and 3rd type of genotypes should be given treatment for twenty four weeks, and the majority of patients with genotypes need 48 weeks treatment as the recommended treatment standard time. Advanced responses were found in patients who were infected with 2 and 3 genotypes compared with infected with one genotype. The main recommendations in the world suggest the determination of genotypes in all patients infected with HCV prior to treatment. Certain epidemiological information on HCV in Pakistan is still scarce. Based on survey data from urban centers mainly, the Pakistan Association of GI Endoscopy and Gastroenterology could be estimated to be 6% of the society as a whole and volunteer blood donors 3-4% are infected with HCV. At the same time "As many of our patients are infected with HCV genotypes, three tests may not be routinely required before HCV genotypes start treating our patients." However, a large-scale study of 3,351 patients from many cities / towns in Pakistan has shown that more than 22% of HCV-infected patients have genotypes. In addition, there was a major change in the prevalence of genotype in different parts of the country. As an anecdote, HCV seroprevalence in our local rural population may be greater than predicted by the PSG and GIE, and the genotype is basically three. Therefore, it is important to know the disease load in a population and also to know its viral properties, especially the genotype. This will clearly reveal the financial and clinical consequences as HCV eradication therapy is costly and is not accessible to the large number of Pakistani people, especially those living in

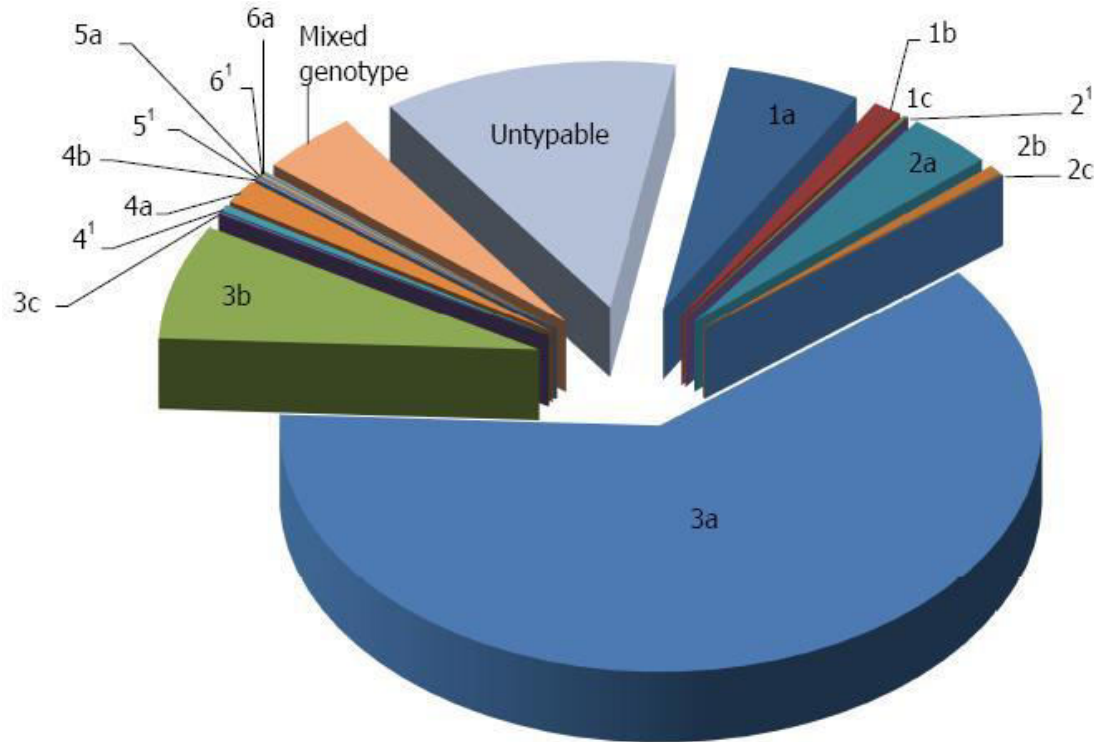
economically poor rural areas. We have done this analysis to know the answer of these questions in our population.

**MATERIALS AND METHODS:**

This retrospective study was conducted in patients attending the Free liver clinic located in the rural areas of Southern Punjab for the period of two year from January 2015 to January 2017. The cities include Bahawalpur, Raheem Yar Khan and Multan. In addition, data were obtained from volunteer blood donors in the same period. In the hospital laboratory, by ELISA all serological tests were performed. In 1022 patients polymerase chain reaction (PCR) for HCV RNA test was done in another laboratory. These patients are already diagnosed to be HCV positive. The HCV RNA fluorescent probes indicator was amplified using real-time amplification and detected using the Smart Cycle (Cepheid) dye. The specificity and sensitivity of the test were 97% and 98%, respectively. Of the patients with HCV RNA confirmed by PCR, 200 were considered to have HCV genotype. A Chi-Square test was performed to test the importance and a p value less than 0.05 was taken static. The confidence interval (CI) and the 95% Odds Ratio (OR) were calculated for significant p values. By the Research Ethics Committee of the hospital this study was approved.

**RESULTS:**

1638 total patients were evaluated for the HCV antibodies presence in FLC. 324 (20%) form these evaluated were found reactive "(male = 211 [66%], mean age 34). In addition, 805 volunteer donors (male = 726 [91%]) were examined for HCV antibodies, of which 122 (15%) were tested are labeled as reactive) (males = 109 [92%], mean age 32). A significant relationship was found between the chi-square test, "reactive" to HCV and whether it was involved in the FLC or if there was a blood donor (test statistic = 7.9, p = 0.005). The odds ratio was 95% CI: 1.11 - 1.75 to 1.39, ie those participating in the FLC had an increase of 1.40 for HCV to be "reactive" compared to donors. Blood Of the total of 1022 patients examined, 905 (89%) detected by PCR for HCV RNA (male with a mean age of 36 = 510 [56%]).

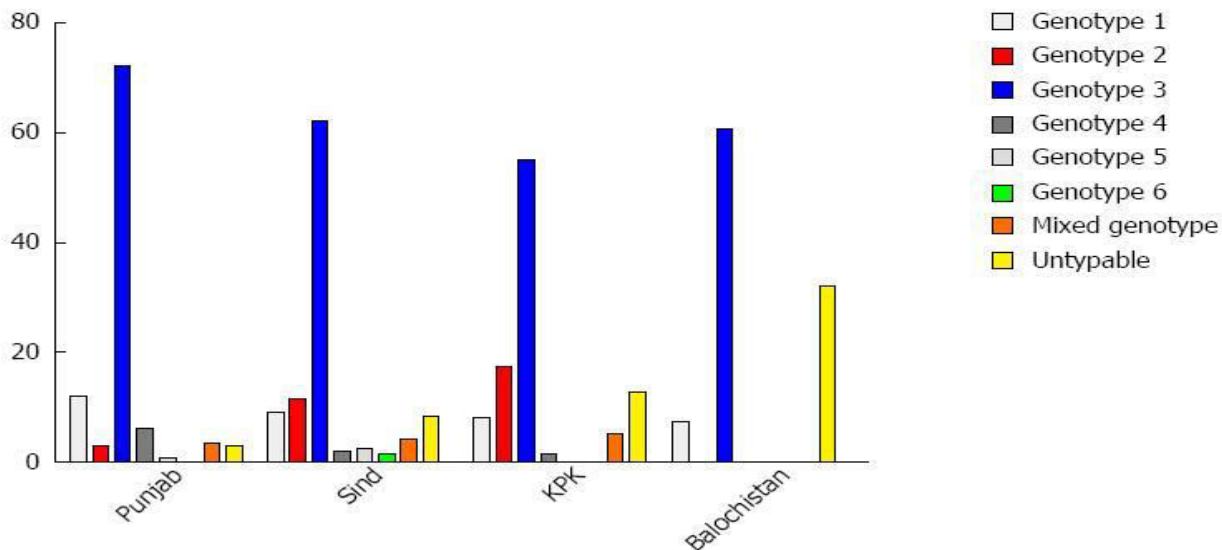


Type HCV genotype was found in 166 of 200 patients. Of these, 125/166 (76%, 94% CI = 69.07% - 82.09%, estimated opportunities = 3.12), a single genotype was infected. Of these, 116/126 patients (92%) were type 3a, 7/126 (6%) type 3b and 5/124 (4%) type 1a. 42 (25%, 95% CI = 18.1% - 31.3%, estimated probability = 0.328) of 166 susceptible genotypes were found to be infected with a mixed genotype (2 genotypes in 1 patient). Of these, 36/42 (86%, 94% CI = 80.08% - 91.01%, estimated probability = 6.04) were infected with type 3a / 3b. With type 3a / 2a three patients were infected and also with 3a / 1a. With only "non-1" genotypes 159 of 167 (95%) were infected (about 96% CI = 93.01% - 99.01%) and the predicted probabilities were 23.07. Only 7 patients (5%) were infected with the genotype alone in combination with (n = 5) or 3a (approximately 96% CI = 1.3% - 6.9%) and the probability of infection with this genotype was estimated. 0044.

#### DISCUSSION:

In rural areas of Pakistan this is the first study. In this region of Pakistan, more people are infected than previously reported in cities, and PSG & GIE predicts it as a whole for Pakistan. A recent review of the published literature shows that the prevalence of

HCV among individual cities in Pakistan is 2.2% (Karachi), 13.5% (in the last 5 years) and Lahore). Approximately two third of the Pakistani people (66%) live in rural areas. As an anecdote, diseases such as hepatitis C infection are more common in rural areas than in urban areas.



In rural areas there are possible explanations for the prevalence of HCV. Poverty, low awareness among people and Lack of knowledge are the major factors for HCV infection expansion. In rural areas of Pakistan these factors are important and quiet more common. Furthermore, in developing countries HCV transmission may be due to Non sterile syringes and non-selective blood transfusion. The figures were 70% and 11%, respectively of HCV transmission.

Variable	Frequency	Chi-square value <sup>a</sup>	P-value	OR	95% CI of OR
Transfusion history	500	29.72	<0.001	3.98	2.36–6.71
Surgical history	500	36.32	<0.001	4.28	2.60–7.03
Dental history	500	51.86	<0.001	6.01	3.55–10.18
Household contact	500	26.38	<0.001	4.18	2.35–7.45
Sexual contact	500	17.14	<0.001	5.32	2.23–12.70

Therefore, the HCV infection expansion may be greater in the people living in rural areas due to the common factors mentioned above. Importantly, it is not surprising that in our work there was a higher seroprevalence than previously published reports (especially in urban areas), previously (mostly in rural areas). We discovered that HCV is more common in men (66%). This is consistent with previous reports. Together, the risk of developing this infection is higher than that of men in our society due to the exposure of the barber and the potentially contaminated shavers. They also need medical facilities that are exposed to blood transfusions, surgical procedures and injections that increase the infection risk, expose them to other sports activities and expose them to the risk of injury.

**CONCLUSION:**

In conclusion, 20% of all patients were seropositive for HCV antibodies in our region, 14% of FLC and volunteer blood donors were found to be higher for each PSG & GIE in Pakistan. In our region, it is seen that three of the genotypes are more frequent than the other regions of the country.

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