

Associated factors of hepatitis C infection in pregnant women at Outpatient Department of Peoples Medical University and Hospital District Shaeed Benazir Abad, Sindh province, Pakistan

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Abstract

Purpose - This study aimed to explore the risk factors associated with transmission of hepatitis C virus (HCV) in pregnant women attending clinics at Peoples Medical College & Hospital in Shaheed Benazir Abad province, Pakistan.

Design/methodology/approach - A descriptive cross-sectional study was conducted among 318 pregnant women, aged from 16 to 45 years, who visited in the Department of Gynecology and Obstetrics during May to June 2018. Irrespective of gestational age on their first visit of antenatal care were also recruited. A structured questionnaire was used to interview participants using convenient sampling. Descriptive statistic was employed for the data analysis.

Findings - Out of 318 respondents, 26 (8.2%) were reported positive with HCV. Socio-demographic factors and past medical history were significantly associated with no education 10 (38.5%), injection 24 (92.3%), and blood transfusion 15 (57.7%).

Originality/value - HCV is a common infection in pregnant women. The prevalence of HCV was associated with socio-demographic factors including poor literacy rate, low socio-economic status, past medical history. Unsafe injection and blood transfusion were found to be strongly associated with increased of HCV among the pregnant women.

Keywords Hepatitis C virus, Pregnant women, Pakistan

Paper type Short report

Introduction

Infection with HCV is major public health concern it is increasing disease burden on health care system especially in low income countries [1]. The virus can cause both acute and chronic hepatitis infection ranging in severity from a mild illness lasting for few weeks to serious life long illness such as cirrhosis, hepatocellular carcinoma and death. HCV is member of flaviviridae single stranded positive RNA genome [2]. The mode of transmission is mainly parenteral and vertical. The prevalence of hepatitis C virus is 3% of the world population with more the 3 million new cases are being reported, every year globally representing a leading cause of liver Cancer and transplant [3]. In Pakistan, prevalence of hepatitis C virus Infection ranges from 8%-15% in the general population with variations in different parts of the country [4].

In Pakistan about 13 million people are infected with HCV within estimated population of 207 million in 2017. Being a vulnerable group, pregnant women are likely to be more infected. Prevalence of hepatitis C in pregnancy has been studied across Pakistan and is reported with the range of 3.27%-8.9% [5]. Viral hepatitis has increased risk of maternal complications during pregnancy and it is a notable reason of maternal mortality [6]. In low resource countries, like Pakistan where there is lack awareness and research orientation, during pregnancy patient can go through different kind of complication, abortions, caesarean section, low haemoglobin, low iron levels, inadequate food intake that can cause vertigo and nausea patient need blood transfusion that is a main cause source of infection because in rural areas of

Pakistan. There are many paramedics and local laboratories transfuse blood without screening [7].

In Australia and Western Europe transmission through injection and drug use is less than 2% Eastern Europe, Latin America, Africa Middle East, South Asia and former Soviet Union more than 3% where Egypt with highest prevalence more than 10% in general population [8].

Under the Human Development Index of the United Nations, Pakistan is ranked 134th of 174 countries due to its poor educational and health standards, Pakistan reported as higher risk country regarding HCV situation and it will be worst in coming years. The disease burden will increase in next decades because of unsafe medical procedures [9]. Regarding high prevalence in Pakistan it is alarming situation because it is the major cause of liver disease related to morbidity and mortality. Common root of transmission is blood products, transfusions, high rate of injectable usage, and reuse of syringes, unsterilized surgical procedures, and sharp objects for skin piercing like cautery, nose and ear piercing. Studies have shown that the risk factors are different from other world or developed countries, high poverty, level of education, low level of sanitary condition. Lack of information on prevention in remote areas plays a great part in spread of disease. Quakes also are responsible for spreading the disease. They give intravenous injection like pain killers and antibiotic for fast relief and earning handsome amount. The carrier rate of HCV is 3-4% [10].

In Sindh province, the prevalence rate is 4-6% that is higher than other provinces. Disease burden continuously increasing in Pakistan as well as for other developing countries. Children and new born are less affected worldwide ranges from 0.2-0.4%. Being a vulnerable group, pregnant women are likely to be more infected in low income countries, where there is lack of awareness and research orientation, the epidemiology and risk factors for HCV are poorly understood. The prevalence of HCV in population can be predicted by the risk factors associated with transmission of infection. These risk factors include blood products transfusion, occupational injury, surgery, unnecessary injections unsafe sex, drug users in vertical transmission from mother to infant through intrauterine transmission, and at time of delivery transmission [11].

Most rural area people are poor, they work as farmers, mason and daily wages and they are not well educated. Therefore, they are not aware about the disease and they cannot afford the lab investigation.

This study aimed to find out the risk factors associated with transmission of hepatitis C virus in pregnant women attending clinics at peoples Medical College & Hospital in Shaheed Benazir Abad district, by identifying the associations between hepatitis c infection in pregnant women with their socio demographic factors, past medical and surgical history.

Methodology

A cross-sectional study was conducted between May to June 2018 in people's medical university at outpatient Department of gynaecology and obstetrics in district Shaheed Benazir Abad Sindh, Pakistan. The study population was pregnant women living in district Shaheed Benazir Abad and suburbs age 16 -45 years.

Sampling size calculated

The sample size was calculated from the following formula:

$$n = \frac{Z_{\alpha/2}^2 P(1 - P)}{d^2}$$

$$= \frac{(1.96)^2 (0.073) (0.927)}{(0.03)^2} = 298 + 29 = 318 (10\% \text{ of sample size for information error}) = 318$$

$$= 289$$

n = estimated sample size

$Z_{\alpha/2}^2$ = level of significance it will be set 0.05 therefore $Z = 1.96^2$

$\alpha = 0.05$ is type 1 error

Measurement tools

The questionnaires were developed and prepared after literature review. It was prepared in English and then translated into local language (Sindhi). Face to face interview was conducted.

Methods of data collection

Three assistant researchers were hired and trained for data collection. The selected assistant researchers were lady health workers from a local health unit. They can communicate easily with pregnant women. An informed consent taken from respondents before including in the study.

Validity and reliability

For validity of the tool, the questionnaire was reviewed by 3 expert advisers, senior faculty members and experts in field of hepatitis and public health to ensure the correctness of the questionnaire. Using the item objective congruence (IOC) indices this review process yielded score 0.84. Pretesting of 24 questions in Sindhi language was conducted in Outpatient Department of Gynaecology and Obstetrics in Hayat local hospital where was far from the site of study area. To ensure the translated tool was consistent with original version following tool, it showed reliability Cronbach's alpha score of 0.86

Data statistical analysis

The data was analysed by SPSS version 22 (licensed by University). All questionnaire was collected and checked on daily basis for errors and completeness.

Descriptive statistics

Mean, frequency, percentage, and standard deviation was applied for general characteristic and general information.

Inferential statistics

To identify the associations between independent variables and dependent variables, chi-square test was used.

Ethical approval

The study proposal was approved from the ethical review committee, of people's medical university and hospital, province of Sindh Pakistan on 1 May 2018.

Results

Among the total 318 pregnant women, 26(8.2%) were found positive infection with viral hepatitis C. Hence, the overall prevalence of hepatitis C infection was found to be 8.2% in the present study, Table 1.

Socio-demographic data in Table 2

Age distribution of respondents with HCV infection

The mean age of the participants was 27.68 ± 6.2 years (age range=16 to 45 years). The HCV-infected participants (the study group) had a mean age of 28.0 ± 6.7 years whereas the mean age of the HCV-negative participants

Table 1. Frequency of hepatitis c infection among pregnant women in district Shaheed Benazir Abad

Hepatitis C	n	%
Positive	26	8.2%
Negative	292	91.8%
Total	318	100%

Table 2. Distribution of pregnant women according to socio-demographic profile between HCV positive and negative (n = 318)

	HCV Positive (n = 26)	HCV Negative (n = 292)	Total	p-value
Age in years	28.0 ± 6.7 (18 to 40)	27.65 ± 6.2 (16 to 45)	27.68 ± 6.2 (16 to 45)	0.78
Age in groups (years)				
16-25	13(50.0%)	135(46.2%)	148	0.75
26-35	10(38.5%)	132(45.2%)	142	
36-45	3(11.5%)	25(8.6%)	28	
Residence				
Rural	20(76.9%)	184(63.0%)	204	0.20 ^a
Urban	6(23.1%)	108(37.0%)	114	
Education level				
Uneducated	10(38.46%)	210(71.9%)	220	<0.001*
Primary to high school	8(30.8%)	73(25.0%)	81	
College or University	8(30.8%)	9(3.1%)	17	
Occupation				
Jobless	5(19.2%)	66(22.6%)	71	0.19
Government employee	10(38.5%)	66 (22.6%)	76	
Farmer & House wife	11(42.3%)	160(54.8%)	171	
Monthly income (PKR)				
≤ 20000	14(53.8%)	126(43.2%)	140	0.54
25000 - 35000	10(38.46%)	133 (45.5%)	143	
≥ 50000	2(7.7%)	33(11.3%)	35	

was 27.65 ± 6.2 years (p -value = 0.78). The incidence of HCV infection showed that women between the ages of 36–45 years had less infection 3(11.5%) with while HCV infection was slightly higher 10(38.5%) in women in the ages 26–35 years. Respondents in the young age groups 16–25 years had the highest prevalence of Hepatitis C infection, 50.0%. The incidence of Hepatitis C among these age groups was insignificant having a p -value of ($P=0.75$).

Residence of respondents with HCV infection

There were 204(64.2%) respondents who had come from rural areas and 114(35.8%) came from urban area. The HCV positive respondents were from rural area 76.9% and from urban area 23.1%. There was no statically significant difference of residential areas (rural & urban) p -value = 0.20^a).

Educational background of respondents with HCV infection

Two hundred and twenty respondents have never attended school among a total pregnant women positive for HCV infection, who never attend school were significantly high 10(38.5%). The one who attend primary to high school were a total of 81 respondents, positive for HCV 8(30.8%). A total of 17 women had education, college and university level also around 8(30.8%) respectively. Whiles pregnant women who were illiterate had significantly highest infection with HCV though the p -value was highly significant ($P=<0.001^*$).

Occupation of the respondents with HCV infection

With regards to occupation, highest frequency 11(42.3%) of HCV infection was observed among women who were farmers and house wives while government servants had the infection 10(38.5%) for HCV infection and jobless count is 5(19.2%) However, no significant association was observed between seropositivity and occupation of study subjects ($p=0.19$) for HCV.

Monthly income of the respondents with HCV infection

According to monthly income of women, highest proportion 14(53.8%) of HCV infection was observed among women who had monthly income < Rs. 20000/= PKR whereas respondents had monthly income of Rs. 25000/= to 35000 PKR. 10(38.46%) respondents had monthly income of Rs. >50000/= were 2(7.7%). However, no significant association was observed between seropositivity and monthly income of the study subjects ($p=0.54^*$) for HCV.

Past medical history in Table 3

Previous H/O hospital admission of the respondents

Most of the women 182(57.2%) ever had hospital admission during this or last year. Of these, 12(46.2%) women had HCV infection. Most of the pregnant women who had no admission in hospital was 136(42.8%) of them positive for HCV were 14(53.8%) with respect to admission in hospital during this or last pregnancy no association identified respectively (p -value = 0.30).

Type of hospital for admission

Regarding what type of hospital respondents choose 182(57.2%) had history of admission the one who choose tertiary care hospital of them 7(58.3%) were positive for HCV in primary and secondary care hospital positive respondents were 3(25.0%) and the one who gone to private hospital were 2(16.7%). In terms of kind of hospital there is no association identified (p -value=0.12).

Previous H/O injection and number of times of the respondents in this year

Regarding injections out of 318 pregnant women, 239(75.2%) were identified who had history of unsafe injections by traditional practitioners during their whole or last pregnancy. Of these, 24(92.3%) women had HCV infection. Women who were positive but never took injection was 2(7.7%) with respect to number of times of getting unsafe injection found strong association between injection and HCV (p -value = 0.002*).

Table 3. Distribution of pregnant women according to past medical history between HCV positive and negative (n = 318)

	HCV Positive (n = 26)	HCV Negative (n = 292)	Total	p-value
Ever admitted in hospital				
No	14(53.8%)	122(41.8%)	136	0.30
Yes	12(46.2%)	170(58.2%)	182	
Kind of hospital you admitted (n = 182)				
Tertiary care	7(58.3%)	73(42.9%)	80	0.12
Secondary care	3(25.0%)	87(51.2%)	90	
Private hospital	2(16.7%)	10 (5.9%)	12	
Injection during this whole pregnancy or last pregnancy?				
No	2(7.7%)	77(26.4%)	79	0.002*
Yes	24(92.3%)	215(73.6%)	239	

(continued)

Table 4. (continued)

	HCV Positive (n = 26)	HCV Negative (n = 292)	Total	p-value
If yes, how many times in this year?				
Never took injection	2(7.7%)	77(26.4%)	79	0.18
1-2	10(38.5%)	97(33.2%)	107	
3-4	6(23.1%)	58(19.9%)	64	
≥ 5	8(30.8%)	60(20.5%)	68	
If yes, how many times in last year?				
No	6(23.1%)	77(26.4%)	83	0.91
2-5	13(50.0%)	135(46.2%)	148	
≥ 5	7(26.9%)	80(27.4%)	87	
Place of taking injection				
Government hospital	14(53.8%)	137(64.0%)	151	0.06
Private hospital	9(34.6%)	42(19.6%)	51	
Dispensary, quakes, others	3(11.5%)	35(16.4%)	38	
Had blood transfusion during this whole pregnancy or last pregnancy?				
No	11(42.3%)	218(74.7%)	229	0.001 ^a
Yes	15(57.7%)	74(25.3%)	89	
If yes, place of transfusion?				
Government hospital	12(46.2%)	61(20.9%)	73	0.005
Private hospital	3(11.5%)	13(4.5%)	16	
Had any kind of surgery in last 2 years?				
No	11(42.3%)	132(45.2%)	143	0.83 ^a
Yes	15(57.7%)	160(54.8%)	175	
What kind of surgical procedure please give details? (n=175)				
Gynaecology / Obstetrics	12(80.0%)	140(87.5%)	152	0.31 ^a
Others	3(20.0%)	20(12.5%)	23	
Had dental treatment or dental surgery?				
No	24(84.6%)	249(85.3%)	273	0.61
Yes	2(7.7%)	43(14.7%)	45	
If yes, kind of dental treatment				
Tooth extraction	2(7.7%)	43(14.7%)	45	0.43
Sharp skin piercing objects ear/nose				
No	0(0%)	5(1.7%)	5	0.29
Yes	26(100%)	287(98.3%)	313	
Live with any close relative diagnosed positive hepatitis C?				
No	17(65.4%)	185(63.4%)	202	0.83
Yes	9(34.6%)	107(36.6%)	116	

Note: * p-value is statistically significant

Injections in last year

Out of 318 respondents 235(73.8%) had injections, from them 13(50.0%) were positive who had injections 2-5 times, 7 (26.9%) were positive for HCV who took injections more than 5 time and 6(23.1%) never had injections but they all were positive for HCV. There is no association between women who were positive or negative with HCV and injectable (p -value= 0.91).

Place of taking injections of the respondents with HCV infection

Out of 318 pregnant women a total 78 (24.5%) never had injection, 240 took injections from government hospital. Of these, 14(53.8%) women had HCV infections in majority whereas 9(34.6%) women took injections from private hospitals with 3(11.5%) took injection from dispensaries and quakes. There was

no statically significant difference between those women who had positive and those women who had negative to HCV with respect to place of taking injection during this or last pregnancy (p -value = 0.06).

History of blood transfusion with HCV infection

Among of 318 pregnant women, 89(28.0%) were having history of blood transfusion during their whole or last pregnancy. Of these, 15(57.7%) women had HCV infection. 11(42.3%) positive respondents never had blood transfusions. Regarding place of transfusion most of the pregnant women 12(46.2%) had blood transfusion at government hospital while 3(11.5%) women had blood transfusion at private hospitals. There was statically significant difference of blood transfusion and place of blood transfusion between those women who had positive and those women who had negative to HCV blood transfusion during this or last pregnancy (p -value = 0.002).

Previous history of any surgery with HCV infection

Among a total of 26 pregnant women who had positive for HCV infection, 15(57.7%) had history of previous surgery in last 2 years and 11(42.3%) were positive with HCV. They never had surgery. There was no significant difference between surgical procedure and HCV infection (p -value = 0.83).

Previous history of dental treatment or surgery

Forty-five (14.2%) pregnant women were identified who had history of previous dental treatment or dental surgery. Only 2(7.7%) women had HCV infection and these two women were treated by tooth extraction. Only 2(7.7%) had other dental treatment or surgery, whereas there was no statistically significant difference between those women who had and those women who had negative infections to HCV with related to kind of dental treatment or dental surgery (p -value = 0.61).

Sharp skin piercing objects ear/nose with HCV infection

Among a total of 26 pregnant women who were positive for HCV infection had history of nose/ear piercing. It showed no association between ear piercing and HCV infection (p -value = 0.29^a).

History of living with close HCV person/relative with HCV infection

Out of 318 pregnant women, 116 were living with HCV infected person/relative. 9(34.6%) women had HCV infection whereas 17(65.4%) were positive for HCV but not having any relative positive. There was no statistically significant difference between those women who were positive and those women who were negative to HCV infections regarding living with HCV infected relative/person (p -value = 0.83).

Past obstetrical history in Table 4

History of pervious number of pregnancies and antenatal

Most of the women, 126(39.6%) were identified who had pregnancies 1 to 2 times. 14(53.8%) women had HCV infection women who had 3-4 pregnancies was positive 6(23.1%) and women who had 5 and above pregnancies was also 6(23.1%, n=26) with no signification difference (p -value = 0.28). Regarding to antenatal care visits, most of the pregnant women who had HCV infection, 16(61.5%) women visited 1 to 2 times for antenatal care. Only 7(26.9%) visited 3-4 time for antenatal care and 3(11.5%) visited > 5 times for antenatal care. Number of antenatal care visits were statistically no association with those women who got HCV infection (p -value = 0.98)

Table 5. Distribution of pregnant women according to past obstetrical history between HCV positive and negative (n = 318)

	HCV Positive (n = 26)	HCV Negative (n = 292)	Total	p-value
Number of pregnancies				
1-2	14(53.8%)	112(38.4%)	126	0.28
3-4	6(23.1%)	80(27.4%)	86	
≥ 5	6(23.1%)	100(34.2%)	106	
Number of antenatal care visits				
1-2	16(61.5%)	185(63.4%)	201	0.98
3-4	7(26.9%)	74(25.3%)	81	
≥ 5	3(11.5%)	33(11.3%)	36	
Mode of delivery				
NVD	13(50.0%)	164(56.2%)	177	0.54
C. section	7(26.9%)	53(18.2%)	60	
Delivered at home (Dai)	6(23.1%)	75(25.7%)	81	
Place of delivery				
Government hospital	14(53.8%)	168(92.3%)	182	0.58
Private hospital	8(30.8%)	65(89.0%)	73	
At home (Dai)	4(15.4%)	59(93.7%)	63	
Do you have abortion in last 2 years?				
No	20(76.9%)	262(89.7%)	282	0.68
Yes	6(23.1%)	30(10.3%)	36	
If you had abortion, please give details				
Abortion	2(33.3%)	13(43.3%)		0.90 ^a
Other reasons	4(66.7%)	13(43.3%)		
Do you ever have dilatation & curettage?				
No	20(76.9%)	251(86.0%)	271	0.24 ^a
Yes	6(23.1%)	41(14.0%)	47	
If yes, please give details				
Never had DNC	20(76.9%)	257(86.0%)	277	0.12 ^a
Abortion	6(23.0%)	35(14.1%)	41	
Do you have diabetes?				
No	25(96.2%)	286(97.9%)	311	0.45 ^a
Yes	1(3.8%)	6(2.1%)	7	
Is your patient of haemodialysis?				
No	25(96.2%)	289(99.0%)	314	0.29 ^a
Yes	1(3.8%)	3(1.0%)	4	
Do you have any kind of blood diseases like haemophilia?				
No	25(96.2%)	289(99.0%)	314	0.29 ^a
Yes	1(3.8%)	3(1.0%)	4	

Mode of delivery with HCV infection

Among of 318 pregnant women, mostly 177(55.7%) had normal vaginal delivery with HCV infection in 13(50.0%). Sixty (18.9%) women delivered by caesarean section with HCV infection in 7(26.9%), while 81(25.5%) women were delivered at home by Dai and HCV infection was observed in 6(23.1%) women. There was no association of mode of delivery among the pregnant women who had HCV infection (p -value = 0.54).

Place of delivery with HCV infection

Three hundred and eighteen pregnant women, 182(57.2%) were delivered at Government hospital in majority. Of these, 14(53.8%) women had HCV infection whereas 8(30.8%) women delivered at private hospital 4(15.4%) delivered at home by Dai who had HCV infection respectively. There was no association of place of delivery among those women who were positive (p -value = 0.58).

History of previous abortion with HCV infection

Among total 318 pregnant women, 36(11.3%) had history of abortion in their last 2 years. Of these, 20(76.9%) were never had abortion but they positive for HCV and from respondents 6(23.1%) women had abortion with HCV infection. There was no statically significant difference between those women who had positive and those women who had negative to HCV with respect to previous abortion in last 2 years (p -value = 0.68) in details of abortion 2 respondents had abortion and 4 stated others reasons (p -value = 0.90^a).

History of dilation and curettage with HCV infection

Among total 318 pregnant women, 47(14.8%) were undergone D & C. Of these, 20(76.9%) never had D&C but positive for HCV 6(23.1%) women had D&C operation and were positive HCV infection. There was no association and statically significant difference between those women who were positive and those women who were negative to HCV related to Dilatation and curettage (p -value = 0.24^a).

Previous history of diabetes mellitus and HCV infection

Among total of 318 pregnant women, 7(2.2%) were identified who had history of diabetes mellitus. from these, only 1(3.8%) women had HCV infection. There was no statically significant difference of diabetes mellitus between those women who were positive and those women who were negative to HCV (p -value = 0.45^a).

Previous history of haemodialysis and haemophilia and HCV infection

Among total of 26 pregnant women positive for HCV infection, only 1(3.8%) had history of haemodialysis and haemophilia respectively and both diseased had no association with hepatitis C infection (p -value = 0.29^a).

Discussion

Several studies in Pakistan showed that HCV levels vary between 0.7% and 20% [12]. This study revealed that out of 318 pregnant women that were included in the study, 26 women had positive HCV infection giving an incidence of 8.2% among the participants. Clinical studies showed an increase of 5.31% in Islamabad, 2.45% in Rawalpindi, 4.06% in Multan, 20.89% in Faisalabad, 4-6% in Karachi, 9% in Mardan, 5% NWFP and 25.7% in Northern areas [13]. In this study, the statistical significance was found among the following factors.

Educational background of respondents with HCV infection

Among a total of 26 pregnant women positive for HCV infection, 8(30.7%, $n = 26$) were educated from primary, to high school 8(30.8%, $n = 26$) women had education at college level, this study shows that level of educational had HCV infection whiles pregnant women who were illiterate had significantly highest infection with HCV 10(38.5%, $n = 26$) though the p value was highly significant ($P < 0.001$). Same observation by Al-Kubaisy et al. [14] who reported an inverse relationship between level of maternal education and seropositive rate of anti-HCV was detected. Illiterate mothers showed significantly higher rate of positive anti-HCV serum, $p = 0.049$.

Previous history of injection and its number of times of the respondents

Regarding injections out of 318 pregnant women, 239(75.2%) were identified who had history of unsafe injections by traditional practitioners during their whole or last pregnancy. Of these, 24(9.3%, $n = 26$) women had HCV infection. There was statically significant difference between those women who were positive and those women who were negative to HCV with respect to getting unsafe injections during

this or last pregnancy (p -value = 0.002*). Similarly, Umumararungu et al. [15] found that unsafe injections by traditional practitioners were of significant exposure risk of contracting HCV infection in his study.

History of blood transfusion with HCV infection

Pregnant women in Pakistan often require blood transfusion for the treatment of severe anaemia and life threatening complications like post-partum haemorrhage. However, Blood transfusion is not at part with standard international guidelines in Pakistan, due to lack of proper screening and voluntary donors [16]. Scarcity of organized infrastructure, standard operating procedures, lack of trained staff and non-affordability of people to pay for screening particularly in rural areas are the main contributors for the spread of disease [17].

Out of 318 pregnant women, 89(28.0%) were having history of blood transfusion during their whole or last pregnancy. Of these, 15(57.7%, $n = 26$) women had HCV infection. Most of the pregnant women 11(42. had blood transfusion at government hospital while 4 (15.4%, $n = 26$) women had blood transfusion at private hospitals. There was statistically significant difference of blood transfusion and place of blood transfusion between those women who had positive and those women who had negative to HCV blood transfusion during this or last pregnancy (p -value = 0.001, p -value = 0.002). Bibi et al. [18] revealed that HCV positive women were more likely to have history of (H/O) blood transfusion (p -value = 0.004).

Conclusion

This study concluded that HCV is a common infection in pregnant women. It was also found out that the prevalence of HCV was associated with socio demographic factors like poor literacy rate, low socioeconomic status; past medical history including unsafe injection by traditional practitioners, and blood transfusion, were found to be strongly associated with increased HCV infection among the pregnant women.

Recommendations

- Further Researches on the prevalence of HCV infection among pregnant women should be carried out in a larger population.
- Concrete and comprehensive efforts are urgently needed by Pakistani government at all levels to control the spread of HCV infection.
- Hepatitis C screening should be included in the routine antenatal tests to identify those at risk, especially for particularly for old age mothers
- The pregnant women should be educated on the risk factors and preventive measures of these viral infections since there is no vaccine for the infection.
- Besides promoting awareness in general public as well as health care providers, implementing preventing strategies in health facilities like use of screened blood transfusion, proper sterilization technique and use of disposable syringes will likely improve worsening situation
- For women of reproductive age with known HCV infection, antiviral therapy is recommended before considering pregnancy, whenever practical and feasible, to reduce the risk of HCV transmission to future offspring.
- At high risk for HCV infection should be screened for anti-HCV, and if positive, HCV RNA, and HIV testing should be performed. Infants of women with hepatitis C infection should be screened and followed up.

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