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RESEARCH ARTICLE

Socio Economic Determinants of Attitude towards Hepatitis B and C: A Case Study of District Faisalabad, Punjab-Pakistan

Azeem Sardar[1], Muhammad Rizwan Yaseen[1], Sofia Anwar[1], Abdul Quddoos[1] and Moeed Waqar[2]

[1]Department of Economics, Government College University, Faisalabad, Pakistan
[2]Agricultural Economics, University of Putra Malaysia, Malaysia

ARTICLE INFO	ABSTRACT
	Hepatitis is a potentially life threatening infectious disease of liver causing serious health problems all around the world like higher mortality and longer morbidity costs to patients. Patients suffering from it face discriminatory behavior not only from health care workers but also from fellow community members. Discriminatory behavior is rooted in the knowledge about this disease and is linked to socioeconomic status of people. Lack of knowledge apparently leads people in Pakistan to discriminatory attitude which can affect willingness of patients to get treatment. This study aims to study awareness and attitude of healthy people towards hepatitis disease and its patients. This study may help to cope with problems related to this disease at community level. Primary data was collected from total 350 respondents through convenient sampling from district Faisalabad-Pakistan. Tobit model was applied to calculate the determinants of people's attitude towards hepatitis B and C. People having high knowledge about hepatitis disease also have positive attitude for hepatitis patients and this result is statically significant. Older people have negative attitude towards hepatitis disease. Education and Income have a positive role to play in the positive attitude towards the patient but income has a very small s coefficient. Rural residents expressed negative relationship with positive attitude on an average as compared to urban residents. Government, NGOs, Media can help academicians and health professionals to contribute in launching the awareness campaign to increase the knowledge about this disease to transform shift the attitude of people from negative to positive.
*Corresponding Author: azeemgill89@hotmail.com	

INTRODUCTION

Hepatitis is a potentially life threatening infectious disease of liver in human. It causes serious health problems all around the world like higher mortality and longer morbidity costs to patients. Acute viral attack may prove fatal and chronic hepatitis may slowly lead to severe liver diseases like Cirrhosis and liver cancer. Globally, 257 million people are affected from Hepatitis-B and 71 million people with chronic HCV infection (WHO, 2017). Consequences of this disease are approximately causing one tenth of deaths worldwide, every year whereas 350 million patients are living their life in chronic stage of Hepatitis (WHO, 2012). About, 3% of world's total population is affected from Hepatitis-C virus (Khokhar et al., 2004). This disease is prevalent world-wide. However, lower potential of developing

countries due to their poor infrastructure in health sector makes hepatitis a severe challenge to developing countries like Pakistan. Incidence of Hepatitis-B varies 7-20 percent in different areas of Pakistan and for hepatitis-C this range is from 4.5% to 8% (Khattak et al., 2013; WHO, 2012). The main reasons for the rapid spread of this disease are lack of knowledge and poor medical facilities especially in the least developed countries like Pakistan (Crutzen and Goritz, 2012; Du et al., 2012; Alam et al., 2007; Khuwaja et al., 2002 and Talpur et al., 2007). In 2015 about 1.34 million deaths were caused by this disease. Lack of knowledge about this disease among health care workers and community members leads to rapid spread of this disease on one hand and discrimination to patients on the other (Pathoumthong et al., 2014; Crutzen and Goritz, 2012; Joukar et al., 2012 and Talpur et al., 2007).

Knowledge, attitude and practices (KAP) of health care workers, physicians and groups of healthy community towards the patients of Hepatitis-B and C were studied by different scholars at international (Saini et al., 2014; Setia et al., 2013; Brouard et al., 2013; Mansour et al., 2013; Hu et al., 2004; Taylor et al., 2005) and local levels (Jamil et al., 2010; Talpur et al., 2007). Awareness about biomedical concepts of diseases like cause, symptoms, precaution and prevention shapes up attitude of people towards patients of those diseases. Practices of health care workers also vary due to their knowledge about the disease. Studying knowledge, attitude and practice (KAP) of a disease helps to understand general perception of people. This information may help to change peoples' perceptions towards the disease and creating positive environment for controlling infectious diseases like Hepatitis (Ali et al., 2009). Afihene et al. (2015) argued that better knowledge is essential for control of Hepatitis-B disease in developing countries like Ghana. In case of patients, their knowledge about the disease is essential for self-care, timely diagnosis and treatment of the disease (Mohamed et al., 2012).

Abiola et al. (2013) and Haq et al. (2012) studied knowledge, attitude and practice (KAP) of hepatitis B among healthy people. Hepatitis patients face negative attitude in developing countries like Pakistan. Attitude of general public is discriminatory towards patients in Pakistan which may be due to lack of knowledge about disease (Mengal et al., 2014; Haq et al., 2012; Jamil et al., 2010). This attitude may affect the willingness of patients to seek treatment of hepatitis, so there is need to find out the reasons of this attitude of general public. Understanding socio-economic factors behind such attitude and knowledge about Hepatitis may help to cope with this disease at community level by putting up targeted efforts to develop an informed positive environment as a support against this disease. This study will also help to address and attenuate the sufferings of patients which they face in the form of social cut-off or discrimination. There is no such study in Pakistan that measure the attitude of people (general public) and its determinants. This study aims to find the determinants of attitude towards Hepatitis.

MATERIALS AND METHODS

Attitude towards patient of hepatitis (B and C) and knowledge about disease is measured. Primary data is collected from 175 hepatitis patients and 175 non-patient through questionnaire in district Faisalabad where every 6th person is hepatitis patient (Khan et al., 2011) while convenient sampling technique is adopted. Knowledge about this disease comprises of many dimensions like cause, source, mode of transmission for spread of this disease, destructive effects of this disease,

preventive measures, available medication of this disease and diagnostics of this disease etc. This study accounted for all such dimensions in total of 27 questions from respondents. The most important 10 out of all such questions were aggregated to represent knowledge of the respondent about this disease. The range of the knowledge score is from 0 to 1 for individual respondent. Where zero represents completely ignorant about this disease and one shows having perfect basic knowledge about Hepatitis. Near to zero means having less knowledge and near to one means having relatively good knowledge. Shah et al. (2015) and Souza et al. (2016) also computed knowledge level with the same method. In short, aggregate knowledge variable represents the extent of knowledge about this disease of a person.

Attitude about this disease comprises of many dimensions like either people want to work with hepatitis patients, either people want to play with patients, people like to eat with patient or not and people want to marry with hepatitis patient or not. This study accounted for all such dimensions in total of 4 questions from respondents. These 4 questions are aggregated to represent attitude of the respondent about this patients. The range of the attitude score is from 0 to 1 for individual respondent. Where zero represents least friendly attitude (negative attitude) for the patients and 1 shows friendlier attitude (positive attitude) of respondent about Hepatitis patients like other studies (Shah et al., 2015; Souza et al., 2016). In short, aggregate attitude variable represents the extent of attitude towards patient. This study aimed to find out the socioeconomic determinants of attitude toward hepatitis patients using this attitude as a dependent variable. A cross sectional data is collected from patients and non-patients for socioeconomic variables like age, gender, locality, education level, household income, household size, information on diagnostic tests or not, lived with any known patient of such disease etc. Tobit model is applied to determine social and economic factors of attitude regarding the patients of hepatitis B and C because dependent variable is in between range of 1 to 0. Tobit model (Tobin, 1958) is used where dependent variable has a number of its values clustered at a limiting value, usually zero. Greene (1997), Goldberger (1972) and Sigelman and Zeng (1999) suggested that tobit model is best for such type of dependant variables. Ahmed and Ahmed (2007) and Yaseen et al. (2014) also used the same model like following:

Attitude = $C + a_1$ age + a_2 education + a_3 no. of family member + a_4 income + a_5 live with HP patient + a_6 locality + a_7 screening test + a_8 Knowledge

Attitude = attitude (0-1). 1 means more friendly attitude while 0 least friendly attitude or negative attitude.

C = constant of the model

Age = age of respondents measured in years.

Education = education measured in number of years of schooling.

No. of family members = it represents the family size of respondents.

Income =it includes total monthly income of respondent plus income of other earning family member plus income from other resources (rent, gift or remittent)

Lived with HP patient = It is another independent variable that shows either respondent ever lived with hepatitis patient or not. If patient live with hepatitis patient, its value is 1 otherwise its value is 0.

Locality = It is recorded as 'rural' and 'urban' categories. Where '1' represents that the respondent belongs to urban areas and '0' represents rural areas.

Screening test = Binary response variable for screening test. It contains 'yes' or 'no' responses on the question that whether the respondent has gone through any screening test for hepatitis disease.

Knowledge = Knowledge about hepatitis disease. It ranges from 0 to 1. 1 means full knowledge and 0 means no knowledge about disease.

a_1 to a_8 are the coefficients of these independent variables.

RESULTS AND DISCUSSION

In a developing country like Pakistan, people have very limited knowledge about causes of hepatitis (B and C) due to high illiteracy rate (Balfour, 2009). Table 1 also explains the same result. Knowledge score ranged from 0 to 1; Whereas, 0 means no knowledge while 1 means full knowledge about hepatitis disease.

Majority of the respondents have no knowledge about hepatitis disease. About 50 percent of the total population had no knowledge, they got zero score. Only 22% percent people got hepatitis knowledge score up to 0.5. It is very important result that only 7% respondents had complete knowledge about hepatitis disease that is very alarming situation. This lack of knowledge can be main reason of rapid increase in hepatitis disease in Pakistan. And this result is consistent with the study of Balfour (2009) and Ali et al. (2009).

Table 1 explains the frequency distribution of attitude score of control group and patients. The score of attitude ranges from 0 to 1; where, 1 means people have very positive attitude towards hepatitis patient while 0 score shows negative attitude towards patients. Table 1 depicted that 60 percent of the population has negative attitude towards hepatitis patients. They did not want to play, work, eat and marry with hepatitis patients. This table also shows that only 4.9 percent people have positive attitude towards hepatitis patients. They allow their children to play, work, eat and marry with hepatitis patient. The main reason for such a negative response towards hepatitis patients is due to lack of

knowledge (Afihene et al., 2015; Mohamed et al., 2012; Haq et al., 2012).

In table 2, knowledge scores are compared with different categories of gender, age and education. Age is divided in three categories on the basis of frequency distribution of respondent data. First category consists of people of less than 34 years age group. While 2nd and 3rd category contains group of people having age from 34 to 45 and above 45 years respectively. Respondents are also subdivided into 5 groups on the basis of education namely primary, middle, matriculation, intermediate and above intermediate. The results of Table 2 show that female respondents had more knowledge than the male respondents. The average mean score of female respondents is 0.34 while it is 0.29 for the male respondents.

This table also revealed that young people had more knowledge than old people about hepatitis. People having age less than 34 years had highest knowledge about hepatitis disease and their mean score is 0.38. People having age between 34 to 45 years group had 0.32 knowledge score. The hepatitis knowledge score is very low (0.26) among old age group of the respondents. These results are similar with the results of (Mohamed et al., 2012 and Afihene et al., 2015).

Mean knowledge score of hepatitis disease among categories with respect to education is also explained in Table 2. The results reveal that educated people have high knowledge about hepatitis disease as reported by (Haq et al., 2012; Adoba et al., 2015; Talpur et al., 2007). People having primary or less than primary education had no knowledge about hepatitis and their knowledge score is only 0.05. The mean knowledge scores for middle, matriculation and intermediate education were 0.21, 0.26 and 0.42 respectively. Respondents having higher education got high knowledge score and their score is 0.65.

In Table 2, the attitude score were also discussed with the gender, age and education level. It is revealed from the table that female respondents had positive attitude for the hepatitis patients than male respondents. Female respondents' attitude score is 0.23 while it is 0.19 for male respondents (Joukar et al., 2012). The results also showed that young people had more positive attitude towards patient than the old people. The attitude score for less than 34, 34 to 45 and above 45 age groups were 0.23, 0.23 and 0.17 respectively. The attitude scores were also compared with different education level of respondents in Table 2. The results showed that people having higher education had more positive attitude than people having low education level and this results is consistent with result of (Afihene et al., 2015; Haq et al., 2012; Mohamed et al., 2012). The attitude scores for primary, middle, matriculation, intermediate and above level of education were 0.06, 0.11, 0.14, 0.25 and 0.40 respectively.

Table 1: Frequency of Attitude score of control group and patients

Attitude Score	Percent	Knowledge Score	Percent
.00	60.6	0.00	50.3
0.25	14.0	0.20	.6
0.50	11.1	0.30	3.7
0.75	9.4	0.40	10.0
1	4.9	0.50	8.3
Total	100.0	0.60	7.1
		0.70	5.4
		0.80	3.7
		0.90	3.7
		1	7.1
		Total	100.0

Table 2: Knowledge and Attitude score compared with Gender, age and education

Knowledge and Attitude		Knowledge Score Mean	Attitude Score Mean
Gender of respondent	Female	0.34	0.23
	Male	0.29	0.19
Categories with respect to Age	Less than 34 years	0.38	0.23
	34-45 years	0.32	0.23
	Above 45 years	0.26	0.17
Categories with respect to education	Primary	0.05	0.06
	Middle	0.21	0.11
	Matriculation	0.26	0.14
	Intermediate	0.42	0.25
	Above	0.65	0.40

One more important result is that people having more knowledge about hepatitis disease also have most positive attitude towards patients than the low educated respondents as shown in Table 2. The same result is also reported by Souza et al. (2016), Mohamed et al. (2012) and Talpur et al. (2007). The table also revealed that respondents having high knowledge had positive attitude towards patient in all categories of age and educations.

In table 3, knowledge and attitude scores were compared with income categories (low, medium and high income groups) and locality wise. Respondents were divided into three categories of income groups depending on the frequency distribution. Low income group consisted of people those had income up to Rs. 23000. While medium and high income groups respondents had income level Rs. 23001 to 50000 and above Rs. 50000 respectively. Respondents were divided into urban and rural areas under locality.

The results showed that low income people had low knowledge while high income people had high knowledge as (Haq et al., 2012). The knowledge score for low income group people is 0.11. These scores were 0.28 and 0.56 for medium and high income group people respectively. Table 3 also revealed that urban people had more knowledge about hepatitis disease as compared to rural areas people. The knowledge score for urban area people is 0.46 while it is 0.19 for rural areas people.

Table 3: Knowledge and Attitude score compared with Income and locality

Knowledge and Attitude		Knowledge Score Mean	Attitude Score Mean
Categorical income	Low income group	0.11	0.12
	Medium income group	0.28	0.17
	High income group	0.56	0.35
Locality (urban/rural)	Rural	0.19	0.15
	Urban	0.46	0.29

Table 4: Determinants of Attitude regarding hepatitis

Variables	Coefficients	Std. Error	z-Statistics
C	-33.969	17.60	-1.929*
Education	0.1243	0.738	0.168
No. of familymembers	2.2916	1.373	1.668*
Income	5.52×10^5	0.0001	0.547
Knowledge	105.55	16.12	6.548***
Live with HP patient	19.53	11.88	1.644
Locality	0.603	7.065	0.085
Screening test	-12.34	7.805	-1.582
Age	-0.604	0.337	-1.787*

***significant at less than 1 percent level significance, *significant at 10 percent level of significance.

Table 3 also explained the attitude results for income categories and locality. It is revealed that low income group of people had negative attitude towards hepatitis patient and their attitude score is 0.12. High income group people had more positive attitude towards patients of hepatitis than medium and small income group. The attitude scores for medium and high income group were 0.17 and 0.35 respectively. Tables also explained that urban people had more positive attitude towards patients of hepatitis as compared to rural area people.

There is strong positive relationship between knowledge and attitude as mentioned in earlier table. People having high knowledge about hepatitis disease also have positive attitude for hepatitis patients (Haq et al., 2012). Therefore, this disease may be defeated by providing awareness, knowledge and by building strong positive attitude of people for hepatitis patients. Attitude about this disease comprises of many dimensions like either people want to work with hepatitis patients, either people want to play with patients, people like to eat with patient or not and people want to marry with hepatitis patient or not. This study accounted for all such dimensions in total of 4 questions from respondents. These 4 questions were aggregated to represent attitude of the respondent about such patients. The range of the attitude score is from 0 to 1 for individual respondent. In short, aggregate attitude variable represents the extent of attitude about patient of a person. This study aimed to find out the socioeconomic determinants of attitude about hepatitis patients using this attitude as a dependent variable. A cross sectional data is collected from respondents

(patients and non-patients) for attitude towards hepatitis patients, socioeconomic variables like age, gender, locality, education level, household income, household size, information on diagnostic tests or not, lived with any known patient of such disease etc. To empirically find out the determinants of attitude of a person for hepatitis patient, in this study following model is run.

Attitude = C + a1 age + a2 education + a3 no. of family member + a4 income + a5 live with HP patient + a6 locality + a7 screening test + a8 Knowledge.

Results of the model are presented in the below table.

Overall statistics of the model showed that the model is a good fit. The R squared coefficient showed 0.40 value. The p-value of the F-test is also showing overall significance of the model. P value is less than 0.05 which means that 95 regressions out of 100 samples from this population will yield jointly significant relationship among variables mentioned above. The hypothesis of age, no. of family members and knowledge are failed to accept. That shows these variables are significantly impact on positive attitude.

As described earlier, attitude of individual towards hepatitis patient is kept as a dependent variable and it comprises of four questions having equal weights. The explanatory variables include age of the respondent, locality (rural and urban), total income of the respondent, education level of the respondent, family size of the respondent, status of screening test ever gone through, status of the respondent about lived with hepatitis patient or not etc. and knowledge about hepatitis disease.

Age of the respondent is recorded in no. of years and it is found to be negatively related with attitude of the respondent. The coefficient value is -0.603875 and p-value of z-test shows that it is significant at 10 percent level of significance. Results of this coefficient shows that older people tend to have negative attitude about the patient therefore, they will be more vulnerable to this disease not only due to poor immunity responses but also due to poor attitude towards the patient. Older people have negative attitude towards hepatitis disease also reported by Haq et al. (2012), Talpur et al. (2007), Joukar et al. (2012) and Mohamed et al. (2012).

Education of the respondent is recorded in years of schooling. It is positively associated with attitude of the respondent. Its coefficient is 0.124286. Education has a positive role to play in the positive attitude towards the patient as (Mohamed et al., 2012; Talpur et al., 2007; Joukar et al., 2012; Haq et al., 2012). Family size is recorded in headcounts. It showed positive effect on attitude index. The coefficient for family size is 2.29 and statically significant.

Total family income of the respondent shows his access to financial means and his economic well-being. Total family income is found to be positively related with attitude about the patient. This result is also in line with

the results of Brouard et al., 2013, Haq et al., 2012 and Mohamed et al., 2012.

It has also been observed that the people who have ever lived with Hepatitis patients possess more positive attitude towards this disease due to their exposure during their living with them. Locality is another dummy variable used in this model. It is recorded in 'rural' and 'urban' categories. Where '1' represents that the respondent belongs to urban areas and '0' represents rural areas. The coefficient for this dummy is 0.60. Rural residents possess negative attitude on an average as compared to urban residents. The result is also supported by Shah et al. (2015) study. This is probably due to the fact that urban areas contain better patient/doctor ratios, better medical facilities, increased educational facilities etc.

Having knowledge about hepatitis disease has positive impact on attitude toward patients and its coefficient magnitude is quite high. Table 4 also reveals that knowledge has significantly positive impact on attitude at less than 1 percent level of significance. People those have more knowledge, they have positive attitude towards hepatitis patients and similar results had also been reported previously (Souza et al., 2016; Afihene et al., 2015; Adoba et al., 2015; Haq et al., 2012; Talpur et al., 2007). Last variable included in this model is binary response variable for screening test. It contains 'yes' or 'no' responses on the question that whether the respondent has gone through any screening test for hepatitis disease. The coefficient for this dummy variable is negative. People having high knowledge about hepatitis disease also have positive attitude for hepatitis patients (Afihene et al., 2015; Haq et al., 2012; Talpur et al., 2007). Older people have negative attitude towards hepatitis disease (Haq et al., 2012; Mohamed et al., 2012). Education has a positive role to play in the positive attitude towards the patients (Mohamed et al., 2012; Haq et al., 2012). Total family income is found to be positively related with attitude about the patient. These findings are also in line with the results of Brouard et al. (2013) Haq et al. (2012) and Mohamed et al. (2012).

It has also been observed that the people who has ever lived with Hepatitis patients possess more positive attitude towards this disease due to their exposure during their living with them. Rural residents possess negative attitude on an average as compared to urban residents and the same result is also reported Shah et al. (2015) in his study. This is probably due to the fact that urban areas contain better patient/doctor ratios, better medical facilities, increased educational facilities etc. People those have more knowledge, they have positive attitude towards hepatitis patients and same result is reported by Haq et al. (2012).

It is concluded that rural population, people having low income and less education have negative attitude which may be due to lack of knowledge about disease.

Government should launch the awareness campaign to increase the knowledge about this disease especially for vulnerable group (poor) and in rural areas so that attitude can also be shifted from negative to positive.

Authors' contributions

AG performed analysis and interpreted results as PhD student, MRY planned and supervised the research as supervisor and helped in write up, SA also supervised research as co-supervisor and wrote article, AQ assisted in data collection and analysis, MW did proof reading.

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