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HIV/AIDS AWARENESS IN PAKISTAN;
BINARY LOGISTIC REGRESSION ANALYSIS OF PDHS-2012-13

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ABSTRACT... Globally 35 million people were living with HIV in 2013 whereas around 78 million people have been infected since the start of the epidemic and 39 million people have died of AIDS- related illness. **Objectives:** To examine the factors associated with HIV/AIDS awareness of ever married men and women age 15-49. **Design:** The secondary data sets are used of Pakistan demographic and health survey (PDHS) of ever married men and women with sample size 3134 and 13558. **Period:** PDHS 2012-13. **Setting:** The national institute of population studies done this survey with the technical support from ICF International and Pakistan bureau of statistics and the USAID supported the financially. **Methods:** Bivariate and binary logistic regression analysis has been carried out to evaluate the significant socio demographic factors. **Results:** Every 7 out of 10 ever married men have heard about AIDS, while the situation is much critical for ever married women, 6 out of 10 have not heard about HIV/AIDS. Generally finding revealed that almost both of the respondents have misconception regarding HIV/AIDS transmission. Two binary logistic regression models are executed one for ever married man and other for ever married women. Two models revealed that early age groups have less knowledge about HIV/AIDS; urban has more knowledge compared to rural. Education level, media assess and wealth index have positive association regarding to HIV/AIDS awareness. **Conclusions:** Socio-demographic aspects such as age, education, place of residence and access to media TV, radio and newspaper, wealth index and occupation are found to be significant varied systematically with the awareness of HIV/AIDS. These statistical outcomes will enhance the capability in disease management and control.

Keywords: Binary logistic regression; HIV/AIDS; socio demographic factors

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INTRODUCTION

Globally 35 million people were living with HIV in 2013 whereas around 78 million people have been infected since the start of the epidemic and 39 million people have died of AIDS- related illness. In 2013 the new HIV infection has been dropped down by 38% since 2001 whereas mortality due to AIDS have been fallen 35% in 2013 as compared to 2005.[1]Higher proportion of people living with HIV lived in Sub-Saharan Africa (24.7 million) followed by Asia and the pacific (4.8 million), Western and Central Europe and North America (2.3 million), Latin America (1.6 million), Eastern Europe and Central Asia (1.1 million) and Middle East and North Africa (230000).[1]

Pakistan jumped from low prevalence to concentrated epidemic category the expected 98,000 people living with HIV in 2009.[2] The most serious transmission modes of HIV in Pakistan are people who inject drug (PWID), transgender, male and female sex workers with prevalence rate are 27.2%, 5.2%, 1.6% and 0.6% respectively.[2] It is obvious that HIV prevalence is usually higher among the people who inject drugs in Asian countries, and needle sharing continues at high levels in worldwide[3] and large population of IDUS in the world live in Asia and the ratio of IDU is higher in low and middle income counties.[4] In Pakistan, people who inject drugs are on top.[2,5] Many researchers have explored the mutual significant transmission risk factors in the major cities of Pakistan that caused for HIV/AIDS transmission which are inject drug user (IDU) sexual contacts blood transfusion.[6,7] A few researchers have explored the co-infection among the jail inmates. In a cross sectional prevalence survey, prevalence rate was 2.01% and 77.78% of them were co-infection.[8]

In Pakistan several major factors of HIV/AIDS are poverty, inject drug users, unsafe injection practices, lack of blood transfusion screening and professional donors, lower literacy and

awareness level, gender inequalities, low contraception use and facilities, commercial sex, sex education as a taboo and stigmatization and discrimination.[9]Lower literacy rate and lack of awareness regarding HIV/AIDS is a major determinant. Raheel et al (2007)[10] in a community based cross-sectional survey was designed in 2002 in a rural region of Sindh, to evaluate the awareness and opinions of youths about sexually transmitted infections and HIV/AIDS. Adolescents having education higher than or equivalent to secondary level, those who were capable to read the newspaper, possessed electricity in their homes and were allowed to meet their friends once in six months had significantly more HIV/AIDS awareness. An anonymous study of 733 men and 355 women was conducted among educated adolescence in Lahore to evaluate the knowledge, attitude and behaviour regarding AIDS among educated young people, only 189 males and 76 female knew the causes of AIDS.[11]

METHODS AND MATERIAL

Data source

So far three demographic health survey (1990-91, 2006-07 and 2012-13) has been conducted as part of the MEASURE DHS international series. The national institute of population studies done these survey with the technical support from ICF International and Pakistan bureau of statistics and the USAID supported the financially. The most recent data set for ever married women with sample size 13558 and ever married men with sample size 3134 used for this study.

Bivariate analysis is performed for both respondents with the object to determine the socioeconomic characteristics that have potential influence in AIDS knowledge of ever married men and women. Pearson's chi- square test of independence was performed to evaluate the association between dependent and independent variable. To understand the functional relationship of variables binary logistic regression analysis was carried out.[12,13] The dependent variable in our study was ever heard about AIDS had two categories (0=no and 1=yes). The explanatory variables were age (15-49), place of residence (urban rural), place of residence by province (Punjab, Sindh, KPK, Baluchistan and Gilgit Baltistan), educational level (Illiterate, primary, secondary and higher), media exposure (read newspaper, listen radio and watch TV), wealth index (poor, middle and rich) and respondents occupation (working and not working).

RESULTS

Ever married men

The maximum (20.3%) and the minimum (1%) respondent's falls in age group 30-34 and 15-19 respectively, while almost same proportion (18%) of respondent lie in 35-39 and upper age groups. The percentage of rural (51.5) respondents are higher compared to urban (48.5). Punjab has a higher proportion of respondents and about quarter (24.2%) of the respondents are from Sindh. Respondents with secondary level of education are in a greater proportion 32% while about more than a quarter (27.1) of the respondents are illiterate. The percentage of wealthy respondents about 45.3%. Whereas the greater number of respondents has access to television and radio compared to newspaper. 97 Out of 100 ever married men are working, the detail description is illustrated in table-I.

Covariate	Response	Women	Men
Age	15-19	4.2	0.9
	20-24	15.1	7.1
	25-29	20.1	15.9
	30-34	18	20.3
	35-39	17	18.8
	40-44	13.3	18.3
	45-49	12.3	18.7
Place of residence	Urban	46.8	48.5
	Rural	53.2	51.5
Residence by province	Punjab	35.1	34.5
	Sindh	21.7	24.2
	KPK	19.9	15.9
	Baluchistan	14.4	17.6
	GB	9.0	7.8
Education status	No education	56.2	27.1
	Primary	13.5	17.1
	Secondary	17.8	31.9
	Higher	12.4	23.9
Wealth index	Poor	37.4	37.2
	Middle	19.1	17.5
	Rich	43.5	45.3

Access to media	No Access to radio	82.4	45.2
	Access to radio	17.6	54.8
	No Read newspaper	74.3	64.2
	Read newspaper	25.7	35.8
	No access to TV	31.8	18.4
	Access to television	68.2	81.6
Occupation	Not Working	78.1	3.1
	Working	21.9	96.9

Table-I. Demographic characteristics of respondents

Ever married women

The maximum (20.1%) and the minimum (4.2%) respondent's falls in age group 25-29 and 15-19 respectively. The percentage of rural (53.2%) respondents are higher compared to urban (46.8%). Punjab and Sindh has higher percentage of ever married women followed by KPK, Baluchistan and GB. More than half (56.2%) of the ever married women are illiterate. 43.5% ever married women are wealthier followed by poor (37.4%) and middle (19.1%) families. Television is accessed by higher proportion of women compared to other media sources. The majority of women (78%) are not working. The graphical presentation of the responses by the ever married men and women about the knowledge of hepatitis avoidance is shown in figure 1. Male has higher (70%) knowledge of HIV/AIDS compared to female (44%).

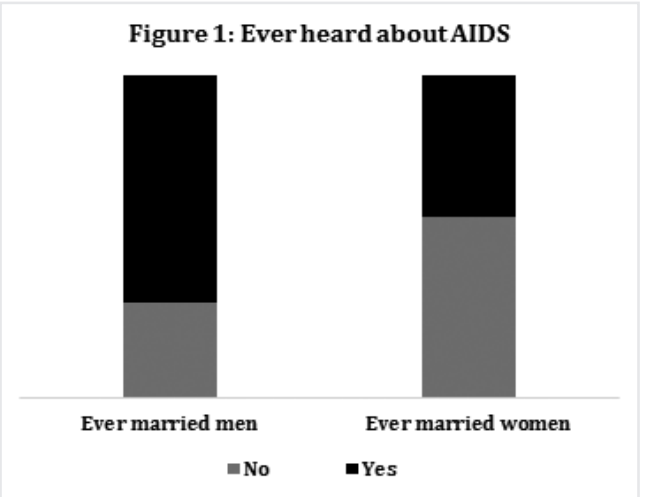

Fig-1. Ever heard about AIDS

KNOWLEDGE AND MISCONCEPTIONS ABOUT HIV/AIDS TRANSMISSION

Transmission knowledge and misconception about HIV/AIDS of ever married women and men age 15-49 are demonstrated in table-II. Almost the same proportions of ever married men and women have agreed that the healthy looking person can have the AIDS. Misconception regarding AIDS transmission, exactly quarter of the women and 18% men agreed that the AIDS cannot be transmitted by mosquito bites. Higher proportion of the male respondent believed that the HIV cannot transmitted by sharing food with a person having HIV, by supernatural means and compared to women. Almost same proportion of the respondents agreed to buy vegetables from vendor with HIV, while the women are more agreed that the female teacher infected with HIV, but is not sick, should be allowed to continue teaching compared to men. Ever married men have more knowledge that the risk of HIV can be reduced by using condom during sex.

Covariate	Response	% ever-married women	% ever-married men
A healthy-looking person can have the AIDS virus	No	15.5	18.3
	Yes	67.1	66.3
	Don't know	17.4	15.4
AIDS cannot be transmitted by mosquito bites	No	54.7	64.7
	Yes	25.0	18.1
	Don't know	20.3	17.2
Can get HIV by sharing food with person who has AIDS	No	53.9	58.2
	Yes	29.9	27.8
	Don't know	16.2	14.0
Would buy vegetables from vendor with HIV	No	46.1	49.6
	Yes	48.4	49.2
	Don't know	5.6	1.2
Can get HIV by witchcraft or supernatural means	No	74.4	84.8
	Yes	8.4	5.8
	Don't know	17.2	9.4
A female teacher infected with HIV, but is not sick, should be allowed to continue teaching	No	27.5	41.6
	Yes	64.5	54.4
	Don't know	8.0	4.0
Reduce risk of getting HIV: always use condoms during sex	No	14.0	20.8
	Yes	54.4	58.3
	Don't know	31.6	20.8

Table-II. Knowledge about AIDS among ever-married women and men age 15-49

Bivariate analysis

Under the bivariate analysis the findings revealed that the early age groups for both respondents have sufficient lack of knowledge regarding AIDS i.e. almost the same proportion (75%) of the ever married men and ever married women with age group 15-19 years old were never heard about AIDS. As age increased the awareness level also increased. For both the respondents urban have more knowledge about AIDS compared to rural. The awareness level for ever married women lived in Punjab is higher (56.4%) followed by Sindh, KPK and GB. Ever married men resident of Punjab province and KPK has more awarded about AIDS compared to other provinces. Educational status, media exposure and wealth index are positively associated with the knowledge of AIDA. Respondent occupation for ever married women found to be significant, the respondents are not working has lower level of AIDS awareness compared to those who worked. Whereas the knowledge of AIDS and occupation of ever married men are independent. The detail explanations of bivariate analysis for both respondents are illustrated in table-III.

Ever heard about AIDS							
		Ever married women			Ever married men		
Covariate	Response	No	Yes	p-value	No	Yes	p-value
Age	15-19	75.50%	24.50%	0.000	75.9%	24.1%	0.000
	20-24	60.90%	39.10%		37.7%	62.3%	
	25-29	52.80%	47.20%		31.4%	68.6%	
	30-34	52.10%	47.90%		27.1%	72.9%	
	35-39	52.80%	47.20%		23.1%	76.9%	
	40-44	56.40%	43.60%		30.5%	69.5%	
	45-49	61.40%	38.60%		31.2%	68.8%	
Place of residence by region	Punjab	43.6%	56.4%	0.000	21.5%	78.5%	0.000
	Sindh	51.0%	49.0%		36.7%	63.3%	
	KPK	63.3%	36.7%		26.6%	73.4%	
	Baluchistan	71.2%	28.8%		33.2%	66.8%	
	GB	80.0%	20.0%		41.9%	58.1%	
Residence	Urban	37.2%	62.8%	0.000	16.2%	83.8%	0.000
	Rural	73.3%	26.7%		42.3%	57.7%	
Educational level	Illiterate	80.5%	19.5%	0.000	64.0%	36.0%	0.000
	Primary	48.1%	51.9%		34.1%	65.9%	
	Secondary	22.1%	77.9%		18.4%	81.6%	
	Higher	5.1%	94.9%		2.4%	97.6%	
Read newspaper	No	70.5%	29.5%	0.000	52.1%	47.9%	0.000
	Yes	15.6%	84.4%		11.0%	89.0%	
Listen radio	No	59.1%	40.9%	0.000	31.7%	68.3%	0.000
	Yes	43.6%	56.4%		25.9%	74.1%	
Listen TV	No	84.9%	15.1%	0.000	60.7%	39.3%	0.000
	Yes	43.1%	56.9%		22.6%	77.4%	
Wealth quintile	Poor	87.5%	12.5%	0.000	55.5%	44.5%	0.000
	Middle	62.2%	37.8%		26.6%	73.4%	
	Rich	27.1%	72.9%		29.6%	70.4%	
Respondent occupation	No working	76.3%	23.7%	0.000	32.0%	68.0%	0.608
	Working	80.5%	19.5%		29.5%	70.5%	

Table-III. Cross tabulation of outcome variable versus explanatory variables

Binary logistic regression analysis

Factors along with odds ratio are showed in table IV, both the models revealed that the early age groups (15-19 and 20-24) have lack of knowledge about HIV/AIDS [OR=0.28 ,0.62 and OR=0.12, 0.58] as compared to upper age groups for ever married women and ever married men. Urban resident has more knowledge about HIV/AIDS [1.652, 1.699] compared to rural for women and men respectively. Whereas the place of residence by region are found to be significant two model revealed that the ever married women and men resident of Punjab knew about HIV/AIDS 5.109 and 3.039 times more than their counterparts who lived in GB respectively are more knowledge regarding to HIV/AIDS. KPK province for both the respondent has significant knowledge about HIV/AIDS. Education and the knowledge of HIV/AIDS has the same direction, as the educational level raise the awareness regarding to HIV/AIDS also increased. Ever married women and men with higher level of education have 24.99 and 24.294 times more knowledge about HIV/AIDS as compared to with illiterate respectively. Media exposure is also positively associated with knowledge of HIV/AIDS for both the respondents. The respondents watching television have more knowledge regarding HIV/AIDS. Positive association found in HIV/AIDS knowledge and wealth index for both the models. Respondent occupation for female are found to be significant and for male found to be insignificant. Ever married women who are working has more 1.026 times more knowledge regarding to HIV/AIDS compared to those who are not working.

DISCUSSIONS

Pakistan is a developing and ranked as a 6th most populous country in the globe and placed 2nd in Islamic countries after Indonesia. It has lower literacy rate, higher proportion lived in rural areas and limited health care settings and quality of life. In this study an attempt has been made to compare HIV/AIDS related knowledge

		Ever heard about HIV/AIDS	
Variables	**Category**	**Ever married Women**	**Ever married men**
	15-19	0.284***	0.119***
	20-24	0.621***	0.588**
Age	25-29	0.998	0.84
	30-34	1.175	0.846
	35-39	1.407***	1.104
	40-44	1.147	0.759
Residence (ref rural)	Urban	1.652***	1.699***
Education level	Primary	2.373***	2.525***
	Secondary	6.276***	3.923***
	Higher	24.99***	24.294***
Read Newspaper(ref no)	Yes	2.165***	2.198***
Has Radio(ref no)	yes	1.28***	1.04
watch TV (ref no)	yes	2.379***	2.235***
Wealth index	Middle	2.078***	1.644***
	Rich	3.298***	2.999***
Occupation (no ref)	Work	1.026**	2.999
Place of residence by region (ref GB)	Punjab	5.109***	3.039***
	Sindh	4.732***	1.476*
	KPK	4.975***	3.765***
	Baluchistan	3.672***	3.241***

Table-IV. Binary Logistic Regression analysis about knowledge of HIV/AIDS

Key: values represent odds ratio; ref implies reference category; ***p<0.001, **p<0.01, *p<0.05 and GB= Gilgit Baltistan

of ever married men and women and also highlight the socio demographic factors that have potential influence towards HIV/AIDS knowledge. Generally finding revealed that almost both the respondents have the misconception regarding knowledge of HIV/AIDS transmission. Higher proportion of male respondents believed that the risk of HIV/AIDS can be reduced by using the condom during sex. Bivariate and binary logistic regression analyses evaluate the significant socio demographic factors. Age, education and assess to media is directly proportional with the knowledge of HIV/AIDS in several studied. Farid (2005)[14] conduct a study and explored that higher socioeconomic group and had educated parents had satisfactory knowledge about AIDS and newspaper and electronic media also have an important role in transmitting knowledge about AIDS. As level of education increased the knowledge about HIV/AIDS also increased in our findings for both ever married men and women.[15] Media can play an important role in changing sexual behaviours, transforming negative beliefs and increasing knowledge.[16-20]In our study the media is also positively connected regarding HIV/AIDS awareness for ever married men and women in both bivariate and binary logistic regression. Wealth index yet another important indicator regarding HIV/AIDS awareness in our finding and positively associated.[21] AIDS knowledge is vary by urban rural and region.[22] Both the model revealed in our finding that the urban has more awareness regarding HIV/AIDS than rural areas while the resident of Punjab province have more knowledge compared to other provinces. Occupations of women are fond to be significant in both the bivariate and binary logistic regression analysis.

CONCLUSIONS

These statistical outcomes can be an emerging in HIV/AIDS prevention, care and support. It needs to be launch some massive and comprehensive awareness programme by utilizing all media modes particularly television. Potential efforts are needed where the lower literacy rate and limited health care settings particularity in rural areas, so that the morbidity and mortality due HIV/AIDS can be declined.

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"Failure is a diving board to raise you higher."

Shuja Tahir

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