

EFFECTS OF SOCIO-DEMOGRAPHIC FACTORS ON KNOWLEDGE ABOUT TRANSMISSION OF AIDS AMONG REPRODUCTIVE AGED WOMEN: EVIDENCE FROM MULTIPLE INDICATOR CLUSTER SURVEY (MICS) 2011 PAKISTAN

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ABSTRACT

Socio-demographic factors are also important to determine the knowledge about HIV prevalence and transmission. The current study has used the Multiple Indicator Cluster Survey 2011 to estimate the impact of socio-demographic factors to determine the knowledge about HIV. Age and wealth index showed highly significant relationship ($p < 0.0000$) in determining the knowledge of HIV. Similarly, the people belonging to the "Rich" group as compared to the "poor" had high percentage for the spread of HIV and, likewise, the misconception of the rich about the spread of HIV was low as compared to the poor and vice versa. Moreover, the increasing level of education showed a decreasing trend of misconception about the spread of HIV.

Key words: Socio-demographic factors, knowledge of HIV, conception about the spread of HIV, comprehensive knowledge and age.

BACKGROUND

AIDS is a severe immunological disorder caused by the retrovirus HIV, resulting in a defect in cell-mediated immune response that is manifested by increased susceptibility to opportunistic infections and to certain rare cancers, especially Kaposi's sarcoma. It is transmitted primarily by exposure to contaminated body fluids, especially blood and semen. (Free on line dictionary). The HIV virus and occurrence of AIDS were first identified in the population in the 1980s. But now the patients of AIDS have increased to a great extent. The 21st century is marked with high rate of HIV victims around the world. The heterosexual societies and Latin America are going to be critical in the prevalence of AIDS in the 21st century (Elizabeth, 2000). It is roughly estimated that currently 35.3 Million people around the world are infected with HIV, of those 5.6 Million are from South Asia and South East Asia. Sub-Saharan Africa is the most affected region, with nearly one in every 20 adults living with HIV. Sixty nine percent of all the HIV victims are living in the same region

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(WHO). More than 1.1 million people in the United States are living with HIV infection, and almost 1 in 6 (15.8 percent) are unaware of their infection. The first case of HIV in Pakistan was detected in 1987 and since then the number of the HIV victims has increased to a greater extent. Pakistan is among the 11 countries in the Asia-Pacific which houses a majority of the people infected with HIV, according to a new report from the Joint United Nations Programme on HIV/AIDS (UNAIDS). According to the National AIDS control Programme in Pakistan, there are currently 87,000 people living with HIV in Pakistan. In 2012 about 3500 people died in Pakistan because of HIV. The proportion of male AIDS patient is more than that of female in Pakistan. The increased rate of HIV in Pakistan is mainly due to unawareness about the disease along with unscreened blood and unprotected sexual practices (Adnan et al, 1998).

Awareness and HIV

HIV is transmitted from one person to another by unprotected sex and by unprotected use of medical facilities like injection and blood. Currently there is no vaccination in the world to control the disease. Therefore, significant importance is being given to the awareness of the disease around the population. Although, about 40,000 new HIV infection cases are reported each year, HIV/AIDS education remains the essential worldwide method to prevent the disease from spreading (Johnson, 2012). The international community is focusing on the awareness campaign of HIV all over the world. In 2011, more than 11 million women around the world received HIV counseling and testing services through U.S. government-funded programs (PEPFAR, Annual Report to Congress on PEPFAR Program Results, 2013).^{1st} December is celebrated as AIDS control and awareness day all over the world by UN. In Pakistan the alarming gap between the knowledge is the root cause of spread in the disease. However, taboos surrounding public discussions of sexuality remain a key constraint to preventive activities (Farid, 2009). There is a misconception about the prevalence of AIDS in Pakistan being an Islamic country. But the cases are increasing and to combat it, the political will and comprehensive programme are equally essential (Yousuf, 2011). To comply with the Millennium Development Goals, Pakistan must also adopt a holistic integrated approach that views health, education, and other social sector developments as intrinsically interrelated and interwoven. Without such an integrated approach, achieving the health-related MDGs is likely to remain elusive for Pakistan (Islam, 2000).

LITERATURE REVIEW

Lal et al. (2000) conducted a study to find out the knowledge and awareness of college students regarding HIV/ AIDS. The results of the study show that the gap in knowledge between boys and girls, and between rural and urban students suggests the need for targeting girls and rural areas in the national AIDS education and awareness campaigns.

Chatterjee et al. (2001) conducted a study titled “A study on awareness of AIDS among school students and teachers of higher secondary schools in North Calcutta”. Only 13.5 percent senior school students and 16.2 percent teachers had clear knowledge regarding AIDS, its general aspects, transmission and prevention. Girls had higher and clear knowledge than boys. 45.8 percent of girls, 38.8 percent of boys and 20.3 percent of teachers had positive attitudes towards nursing an AIDS case.

Gaash et al. (2003) found from the study that approximately one fourth of the respondents have never heard of the disease. From those who were aware, 49.12 percent had no idea of the causative agent; about 26 percent of the respondents had the perception that the disease is yet to reach the State. Ignorance of various risk groups within the society was also very much wide spread. A majority of the respondents (87.56 percent) believed that the presence and spread of HIV/AIDS in the society were due to degradation of moral values. Hospitalization was preferred as a better way of managing AIDS patients by 48.44 percent of those interviewed.

Similarly, Edewor (2010) conducted a study and concluded that proper information and awareness is prime factor that can help in countering the problem of HIV/AIDS. Information increases the level of certainty in any human decision process.

Mooko and Aina (2007) pronounce that every individual, whether literate or illiterate, needs information for a variety of issues essential for his or her survival. In the same context it is very important to properly disseminate the information regarding HIV/AIDS.

Hargreaves et al. (2008) conducted a study on the higher education students and concluded that the knowledge about HIV is reversely proportional to the level of education. Students having higher level of education are more aware regarding the spread of the disease and other related information.

Kimuna and Djamba, (2005) found that wealth is directly related to the information seeking and more knowledge regarding the diseases. However,

the same wealth can lead to reckless lifestyle which could add to the chances of confronting the disease.

Mishra et al. (2007) carried out a study of the association between household wealth and HIV infection using eight DHS surveys in sub-Saharan Africa and found out that adults in the wealthiest quintiles have a higher prevalence of HIV than those in the poorer ones.

Bhatia et al. (2010) conducted a study to increase the awareness about HIV AIDS and different dimensions related to it. The study location was Chandigarh India. It was found from the study that National AIDS Control Program is working in the right direction in raising the awareness level of the society regarding HIV. The awareness level has increased from 58.2% to 70%. The major source of information was media and friends in raising the awareness. However, a large section of the population was still unaware of the issue and more comprehensive intervention is the need. Future interventions must be directed keeping in view different segments of the society.

Sudha, B. et al (2011) in a study found that with the increase in age the level of awareness also increases among adolescent boys. The study also revealed that the major reason of HIV is the commercial sex worker. Education and correct scientific information are urgently needed to adolescent boys of tribal villages to avoid myths and misconceptions on HIV/AIDS.

Anurag et al (2011) conducted a study to find out the best way to combat the HIV. The study found that raising awareness is the best tool to combat HIV. In addition to that, the study found that school education is the “Social Vaccine” to control this disease. The awareness regarding modes of transmission, methods of prevention and treatment was found to be significantly higher among boys as compared to girls ($P < 0.01$).

Lemassa et al (2013) conducted the study to find out the awareness level among school going children regarding HIV. Socio-demographic characteristics like age, gender, father education and wealth index were independent variables while comprehensive knowledge was treated as the dependent variable. Only about one in four, ie 677 (24.5%), in-school adolescents have comprehensive HIV/AIDS knowledge. The knowledge was better among in-school students from families with a relatively middle or high wealth index who got HIV/AIDS information mainly from friends or mass media and who received education on HIV/AIDS and sexual

matters at school. The females were less likely to have comprehensive HIV/AIDS knowledge compared to males.

Hileni et al (2011) found from their study that the knowledge of home based care providers regarding HIV. Although, the knowledge of the caregivers on HIV was above average in some aspects, there was still lack of knowledge on isolated issues such as HIV definitions and signs and how HIV works. Training organizations in home-based care settings should emphasise the knowledge of HIV definition and signs as well as post-test counseling, consequences of poor adherence and facilities that issue anti-retroviral treatment.

The current study will build on previous research to establish whether the above findings hold across most of the literature review. The current study collectively looks into the relationship between education, wealth, age and residence and knowledge about the HIV AIDS. Similarly, most of the study relied on the secondary data and DHS is most common form of secondary data being more valid and reliable. The current study also uses MICS which is household based secondary data.

METHODOLOGY

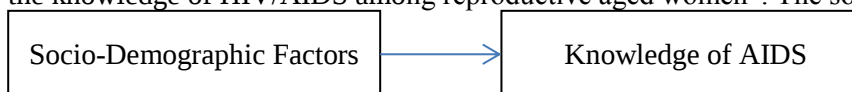
The current study is based on the secondary data obtained from Multiple Indicator Cluster Survey 2011. The study has been conducted with a joint collaboration among Government of Punjab statistics bureau with technical support of UNDP and UNICEF. The study is explanatory in nature as it tries to explain the reasons of awareness and knowledge about HIV/AIDS.

Sample Size

The sample for the said study was 102,545 households with an exceptional response rate of 97 percent. The said study used cross sectional survey wherein quantitative information was collected through questionnaire. The said survey collected information regarding respondents' socio-demographic characteristics along with the information against different health indicators including fertility, family planning, infant and child mortality, reproductive health, child health, nutrition, adult and maternal mortality, and knowledge of AIDS.

Hypothesis

The current study hypothesizes that “Socio-demographic factors determine the knowledge of HIV/AIDS among reproductive aged women”. The socio-



demographic factors are taken as the independent variables while the dependent variable for the current study is knowledge of HIV/AIDS.

Variable Definition and Construction

The independent variable for the current study was measured by using, age, place of residence, wealth index, level of education. On the other hand, dependent variable include, Knowledge of HIV, ever heard about HIV, different means of HIV transmission and some conception of the respondents about HIV.SPSS Bivariate Analysis is employed to study the variables involved. Some variables are recoded / re-categorized for making the statistical analysis possible and see the relationship, if any exists between the hypothesized variables.

INDEPENDENT VARIABLE

As stated above the independent variable of the current study is socio-demographics of the respondents. Following is the list of all the socio-demographics included in the current study.

Age Group

The age group of the respondents was divided into 7 categories in the MICS survey report. But owing to the study objectives and to make the bivariate analysis possible it is re-categorized into 3 classes with age interval of 15-30, 31-45 and 45 and above. This made the analysis process feasible because no respondent was below the age of 15 years in the MICS survey.

Residence

The residence of the respondents was formulated in the four divisions. The rural- urban bifurcation and major cities and other urban areas were identified.

Education

The education of the respondents was divided into five categories i.e. No education, Primary education, Secondary Education, Higher education. No education means absence of schooling, primary for classes 1-5, secondary 5-10 and higher education above 10.

Wealth Index

The wealth index in the MICS survey was divided into 3 categories i.e. lowest, middle and the highest. These three categories were formulated on the basis of monthly income, house hold assets such as television, car, refrigerator, clean drinking water and sanitation facilities available to the respondents. They are mentioned as lowest one at the bottom and highest at the top with regard to the wealth and availability of the other facilities.

DEPENDENT VARIABLE

Dependent variable of the current study is knowledge of AIDS. Knowledge of the AIDS is not so simple as to describe or answer in just Yes or No, rather it is the comprehensive knowledge about AIDS that includes the following categories.

Knowledge of AIDS

Knowledge of HIV/AIDS was measured by the following indicators.

- Comprehensive knowledge about AIDS. Women who had comprehensive knowledge about HIV prevention included those who knew of the two main ways of HIV prevention i.e. living with only one man (husband) who has no other wife and can they avoid AIDS by using a condom correctly every time, who understood that a healthy looking person could have the AIDS virus, and who rejected the two most common misconceptions about transmission of AIDS.
- ‘Ever heard about the disease’ variable includes simple question in the Yes and No format whether the respondents have heard about the disease. This signifies the knowledge about the disease.
- Knowledge about the misconception about the spread of the disease by simply mosquito bites and sharing of food along with supernatural reasons of disease transmission.

- The understanding of two methods i.e. uninfected husband, correctly using of condoms and can a healthy person suffer from the disease.

Data Analysis techniques:

The data was analyzed by using SPSS version 19. The data analysis was carried out in two phases. In the first phase descriptive statistics in the form of cross tabulation was presented to find out how different categories of socio-demographic factors were associated with knowledge of HIV.

In the second phase, inferential statistic analysis was applied in the form of regression analysis. The regression analysis was applied in order to predict the factors behind the knowledge of HIV/ AIDS. The binary logistic regression would be applied keeping in view the response categories of the questions.

RESULTS

Separate cross tabulations were performed to see the relationship of 'ever heard of HIV' for the cross table one and conception about disease in the second cross table along with the comprehensive knowledge about HIV transmission. The third cross table shows the relationship between socio-demographic factors and other conception like uninfected husband, using condom correctly every time and a healthy person can have HIV. The respondents who answered "yes" in the first cross tabulation were then checked against the correct conception of HIV in the other cross tabulation. The fourth cross table shows the relationship between socio-demographic indicators and transmission of HIV from mother to child.

CROSS TABULATION 1

		Ever heard of AIDS				χ^2	df	p-value
		Yes	No	Missing	Total			
Area of residence	Rural	9879	40143	35	50057	5586.77	2	0.000
		40.15%	67.95%		59.78%			
	All Urban	14729	18932	21	33682			
		59.85%	32.05%		40.22%			
Total		24608	59075	56				
Urban area bifurcation	Major Cities	4171	3692	4	7867	359.95	2	0.000
		28.32%	19.50%		23.36%			
	Other Urban	10558	15240	17	25815			
		71.68%	80.50%		76.64%			
Total		14729	18932	21	33682			
Education	None/Preschool	3066	39570	33	42669	32151.60	10	0.000
		12.46%	66.98%		50.95%			
	Primary	4118	11288	3	15409			
		16.73%	19.11%		18.40%			
	Middle	3611	4286	7	7904			
		14.67%	7.26%		9.44%			
	Secondary	6730	3070	8	9808			
		27.35%	5.20%		11.71%			
Higher	7081	860	5	7946				
	28.78%	1.46%		9.49%				
Total		24608	59075	56	83739			
Wealth Quartile	lowest	2,151	26,171	21	28,343	14969.44	4	0.000
		8.74	44.30		33.85			
	middle	11,600	25,873	23	37,496			
		47.14	43.80		44.78			
	Highest	10,857	7,031	12	17,900			
		44.12	11.90		21.38			
Total		24,608	59,075	56	83,739			
Age groups	15-30	11295	23616	19	34930	449.82	4	0.000
		45.90%	39.98%		41.71%			
	31-45	11881	29820	32	41733			
		48.28%	50.48%		49.84%			
	46+	1432	5639	5	7076			
		5.82%	9.55%		8.45%			
Total		24608	59075	56	83739			

The first cross tabulation shows the relationship between different socio-

demographic factors and 'ever heard of HIV'.

Prevention is the best medicine for curing any disease which may be HIV/AIDS etc. One of the major parts of prevention is raising awareness among the masses especially regarding the infectious diseases. When talking about the awareness regarding HIV/AIDS, the level of awareness is different among the female of different residential backgrounds such as Rural and Urban. Awareness of AIDS and area of residence are highly significant i.e. (p -value, $0.000 < 0.05$). The percentage of female who has ever heard about AIDS in rural areas is 40.15percent while in urban areas is 59.85percent. Among the urban population of female, who has ever heard about HIV/AIDS the proportion of the Majors cities is 28.32percent while in other urban areas proportion is 71.68percent. Relationship between schooling of the females and awareness is also highly significant i.e. (p -value, $0.000 < 0.05$). As the level of education increases there is continuous increase in the awareness of HIV/AIDS. Illiterate proportion of the females who has ever heard about AIDS is 12.46percent while among the female who are primary literate this is 16.73percent, this proportion goes on increasing as the level of schooling increases from middle, secondary and higher i.e. 14.67percent, 27.35percent and 28.78percent. Results show that awareness of AIDS is highly significant with the wealth quartile (p -value, $0.000 < 0.05$), the level of awareness about HIV/AIDS is high i.e. 47.14percent and 44.12percent among middle and high wealth quartiles while among the lower it is 8.74percent. While looking at the age group and awareness, awareness is high among the young and middle aged females as 45.90percent females who have ever heard about HIV and AIDS are among age group of 15-30 while 48.28percent are in the age group of 31-45; interestingly, the proportion of the population that is above 46 is only 5.82percent.

CROSS TABULATION 2

		Misconception Supernatural			Misconception mosquito bites		Misconception Sharing Food	
		CK	Yes	DK	Yes	DK	Yes	DK
Wealth Index	Lowest	177	315	442	698	419	920	302
		4.46%	14.81%	13.67	13.02%	12.69	10.61%	12.85
	Middle	1,534	1,132	1,801	2,884	1,779	4,356	1,222
		38.61	53.22%	55.71	53.82%	53.86	50.21%	52.00
	Highest	2,262	680	990	1,777	1,105	3,399	826
		56.93	31.97%	30.62	33.16%	33.45	39.18%	35.15
Total	3,973	2,127	3,233	5,359	3,303	8,675	2,350	

		<i>Chi-Square</i>	579.050		752.413		351.251	
		<i>P-Value</i>	0.000		0.000		0.000	
Age Groups	15-30	1,865	941	1,377	2,311	1,460	3,947	1,034
		46.94	44.24%	42.59	43.12%	44.20	45.50%	44.00
	31-45	1,908	1,027	1,665	2,686	1,627	4,210	1,156
		48.02	48.28%	51.50	50.12%	49.26	48.53%	49.19
	46+	200	159	191	362	216	518	160
		5.03%	7.48%	5.91%	6.75%	6.54%	5.97%	6.81%
	Total	3,973	2,127	3,233	5,359	3,303	8,675	2,350
		<i>Chi-Square</i>	34.588		47.038		10.876	
		<i>P-Value</i>	0.000		0.000		0.092	
Education	None/Presch	134	487	805	1,086	726	1,309	548
		3.37%	22.90%	24.90	20.26%	21.98	15.09%	23.32
	Primary	300	515	831	1,300	793	1,764	557
		7.55%	24.21%	25.70	24.26%	24.01	20.33%	23.70
	Middle	464	325	555	864	561	1,383	396
		11.68	15.28%	17.17	16.12%	16.98	15.94%	16.85
	Secondary	1,190	471	713	1,153	783	2,244	549
		29.95	22.14%	22.05	21.52%	23.71	25.87%	23.36
	Higher	1,885	328	328	956	440	1,975	300
		47.45	15.42%	10.15	17.84%	13.32	22.77%	12.77
	Total	3,973	2,127	3,233	5,359	3,303	8,675	2,350
		<i>Chi-Square</i>	1,822.3		2,152.2		1,236.7	
		<i>P-Value</i>	0.000		0.000		0.000	
Area of Residence	Rural	1,350	1,017	1,545	2,531	1,555	3,803	1,047
		33.98	47.81%	47.79	47.23%	47.08	43.84%	44.55
	All Urban	2,623	1,110	1,688	2,828	1,748	4,872	1,303
		66.02	52.19%	52.21	52.77%	52.92	56.16%	55.45
	Total	3,973	2,127	3,233	5,359	3,303	8,675	2,350
		<i>Chi-Square</i>	174.032		276.553		123.438	
		<i>P-Value</i>	0.000		0.000		0.000	
Urban Area Bifurcation	Major Cities	700	234	495	736	520	1,324	408
		26.69	21.08%	29.32	26.03%	29.75	27.18%	31.31
	Other Urban	1,923	876	1,193	2,092	1,228	3,548	895
		73.31	78.92%	70.68	73.97%	70.25	72.82%	68.69
	Total	2,623	1,110	1,688	2,828	1,748	4,872	1,303
		<i>Chi-Square</i>	31.147		10.793		9.943	
		<i>P-Value</i>	0.000		0.013		0.019	

The second cross tabulation shows the results of socio-demographic factors and misconception about the spread of HIV. Misconception regarding spread of HIV with mosquito bites and general sharing of food was measured by comparing it with the socio-demographic trends.

Comprehensive Knowledge and Misconceptions Regarding the Transmission of HIV/AIDS

Comprehensive knowledge about HIV/AIDS is highly significant with wealth quartile as the p-value is less than 0.05 ($0.000 < 0.05$). Comprehensive knowledge refers to the correct understanding of at least two misconceptions regarding the transmission of HIV, two preventive measures and to have knowledge that healthy people may be HIV/AIDS positive. Comprehensive knowledge increases as the wealth quartile increases from lowest to highest i.e. lowest wealth quartile has lowest percentage of comprehensive knowledge. It goes on increasing as 38.61percent among middle and 56.93percent among highest wealth quartile. Interestingly percentage of misconception that supernatural power causes HIV/AIDS is the highest among middle class that is 53.22percent. The percentage of misconception that AIDS is transmitted by mosquito's bite is 13.20percent among lowest, 53.82percent among middle and 33.16percent among highest wealth quartile. The proportion of misconception that AIDS transfers to others by sharing food is 10.61percent among lowest, 50.21percent among middle and 39.18percent among highest wealth quartile. Comprehensive knowledge regarding AIDS is 46.94percent among young female of age group 15-30, 48.02percent in 31-45 and the lowest among the female of the age above 46 years i.e. 5., as this age group has least awareness of HIV/AIDS. Misconception that HIV/AIDS is caused by supernatural power is about 44.24percent among the young, 48.28percent among middle aged and 7.48percent among the female who are above 46 years old. HIV/AIDS transmitted by mosquito biting is considered 43.12percent by young female, 50.12percent by middle aged and 6.75percent by the females above 46 years. Education and comprehensive knowledge are highly significant as p-value is less i.e. 0.000 than the alpha value i.e. 0.05. The percentage of comprehensive knowledge goes on increasing as the schooling increases such as the percentage of comprehensive knowledge in illiterate females is 3.37percent, in primary literate 7.55percent, in middle literate 11.68percent, in secondary literate 29.95percent, while among higher educated female is 47.45percent. While looking at misconceptions regarding HIV/AIDS, 22.90percent illiterate think that HIV/AIDS is caused by supernatural power, this proportion is

24.21percent, 15.28percent, 22.14percent, 15.42percent among primary, middle, secondary and higher educated persons. Misconception that HIV/AIDS transmit from mosquitoes biting is considered by illiterate female, percentage among other education groups is as 24.26percent in primary, 16.12percent in middle, 21.52percent in secondary and in higher educated females which is 17.84percent. When comparing different education groups and misconceptions that HIV/AIDS transmits by sharing food with infectious persons is considered 15.09percent by illiterate, 20.33percent by primary, 15.94percent by secondary and 22.77percent by highly educated females. The awareness of comprehensive knowledge also depends upon the area of residence of the people as the comprehensive knowledge and area of residence are highly significant (p -value, $0.000 < 0.05$), the percentage of comprehensive knowledge among rural residents is only 33.98percent while females living in urban areas have comprehensive knowledge about 66.02percent. Misconception that HIV/AIDS is caused by some supernatural power is also different in both the areas as in rural areas this is 47.81percent and in urban areas this is 52.19percent. There is a visible difference among the awareness regarding the misconception that HIV/AIDS is transmitted by one person to the other by biting of mosquitoes and percentage in rural areas is 47.23percent while in urban areas, it is 52.77percent. Misconception that HIV/AIDS may also transmit by sharing food is 43.84percent in rural areas, while in urban areas it is 56.16percent. Comprehensive knowledge is also different in urban areas like it is 26.69percent in major cities while in other urban areas, it is 73.31percent. Misconceptions are also different in urban and rural areas 21.08percent rural respondents think that HIV/AIDS are caused by supernatural power, while this is 78.92percent in urban areas. 26.03percent rural residents consider that HIV/AIDS can be transmitted by mosquitoes biting while in urban areas, this proportion is 73.97percent. HIV/AIDS can transfer from person to person by sharing food items is considered by 27.18percent rural residents but according to urban residents, it is 72.82percent.

CROSS TABULATION 3

		uninfected husband with no other wife			using a condom correctly every time			Healthy-looking person may have AIDS virus		
		Yes	No	DK	Yes	No	DK	Yes	No	DK
Wealth index quintiles	Lowest	1,158	404	585	858	441	842	1,310	431	408
		7.22	9.93	13.10	6.77	9.16	11.95	7.78	9.60	12.44
	Middle	7,170	1,974	2,439	5,542	2,331	3,696	7,825	2,124	1,646
		44.68	48.53	54.60	43.73	48.44	52.46	46.50	47.32	50.20
	Highest	7,718	1,690	1,443	6,272	2,040	2,508	7,693	1,934	1,225
		48.10	41.54	32.30	49.49	42.39	35.59	45.72	43.08	37.36
	Total	16,046	4,068	4,467	12,672	4,812	7,046	16,828	4,489	3,279
		431.68			420.29			126.54		
		0.00			0.00			0.00		
New Age groups	15-30	7,410	1,859	2,019	5,833	2,210	3,220	7,804	2,092	1,394
		46.18	45.70	45.20	46.03	45.93	45.70	46.38	46.60	42.51
	31-45	7,782	1,952	2,128	6,148	2,333	3,355	8,079	2,117	1,678
		48.50	47.98	47.64	48.52	48.48	47.62	48.01	47.16	51.17
	46+	854	257	320	691	269	471	945	280	207
		5.32	6.32	7.16	5.45	5.59	6.68	5.62	6.24	6.31
	Total	16,046	4,068	4,467	12,672	4,812	7,046	16,828	4,489	3,279
		29.11			17.96			21.53		
		0.00			0.01			0.00		
Education	None/ Preschool	1,503	559	997	1,017	593	1,439	1,802	555	707
		9.37	13.74	22.32	8.03	12.32	20.42	10.71	12.36	21.56
	Primary	2,236	717	1,159	1,681	820	1,604	2,580	779	756
		13.93	17.63	25.95	13.27	17.04	22.76	15.33	17.35	23.06
	Middle	2,235	627	745	1,741	714	1,142	2,370	689	550
		13.93	15.41	16.68	13.74	14.84	16.21	14.08	15.35	16.77
	Secondary	4,628	1,109	988	3,692	1,353	1,673	4,702	1,262	765
		28.84	27.26	22.12	29.14	28.12	23.74	27.94	28.11	23.33
	Higher	5,442	1,056	578	4,540	1,332	1,187	5,372	1,204	501
		33.91	25.96	12.94	35.83	27.68	16.85	31.92	26.82	15.28
	Total	16,046	4,068	4,467	12,672	4,812	7,046	16,828	4,489	3,279
		1413.32			1451.65			671.07		
		0.00			0.00			0.00		
Area of	Rural	6,062	1,671	2,132	4,822	1,937	3,087	6,644	1,836	1,394

residence		37.78	41.08	47.73	38.05	40.25	43.81	39.48	40.90	42.51
All Urban		9,984	2,397	2,335	7,850	2,875	3,959	10,184	2,653	1,885
		62.22	58.92	52.27	61.95	59.75	56.19	60.52	59.10	57.49
Total		16,046	4,068	4,467	12,672	4,812	7,046	16,828	4,489	3,279
		147.29			62.70			11.81		
		0.00			0.00			0.01		
Urban area		2,899	710	561	2,199	860	1,101	2,842	750	577
bifurcation	Major Cities	29.04	29.62	24.03	28.01	29.91	27.81	27.91	28.27	30.61
		7,085	1,687	1,774	5,651	2,015	2,858	7,342	1,903	1,308
Other Urban		70.96	70.38	75.97	71.99	70.09	72.19	72.09	71.73	69.39
	Total	9,984	2,397	2,335	7,850	2,875	3,959	10,184	2,653	1,885
		28.46			4.80			5.73		
		0.00			0.19			0.13		

The second cross tabulation shows the results of socio-demographic factors and misconception about the spread of HIV and two methods of controlling HIV, and if a healthy looking person may have HIV virus.

Prevention Methods

While looking at the prevention methods, adopted to avoid the spread of the HIV/AIDS, wealth quartiles and prevention methods are highly significant ($p\text{-value } 0.000 < 0.05$), 7.22percent lowest wealth quartile considers that HIV/AIDS can be avoided by living with unaffected husband who contacts with no other wife, percentage among other wealth quartiles is 44.68percent in middle and in highest wealth quartile, it is 48.10percent. Using condom correctly and avoiding HIV/AIDS is also highly significant with different wealth quartiles. The percentage of the lowest wealth quartile who considers that HIV/AIDS can be avoided by using condom correctly is 6.77, in middle wealth quartile the percentage is 43.73, while in highest wealth quartile the percentage is 49.49. The females of different age groups have different thinking regarding the prevention methods. 46.18percent female of the age group 15-30 consider that HIV/AIDS can be avoided by living with unaffected husband who has no other wife; this percentage is 48.50 among the age group of 31-45; while among 46 and above, this is only 5.32percent. Different age groups of females have different views regarding the use of condom and prevention of HIV/AIDS, 46.03percent young females consider this as a prevention method, 48.52percent middle aged females consider this prevention measure, 5.45percent elderly females say that AIDS can be avoided by this method. Among young females,

46.38percent consider that young healthy looking persons may have AIDS, while 48.01percent middle aged and 5.62percent females of the age above 46 years have same thinking. Schooling of the respondents and prevention methods are highly significant ($p\text{-value } 0.000 < 0.05$), 9.35percent illiterate female consider that AIDS can be avoided by living with husband who is unaffected and has no other wife, this is 13.93percent among primary pass female respondents, 13.93percent among middle pass, 28.84percent secondary and among highly educated females, this is 33.91percent. Using condom as preventing method from AIDS is 8.03percent among illiterate females, 13.27percent among primary, 13.74percent among middle, 29.14percent among secondary and 35.83percent among highly educated females. The females of different schooling levels have different views about the possibility that a healthy person may be HIV positive. 10.71percent among illiterate female respondents think that a healthy looking person may be HIV positive, this percentage among primary is 15.33percent, 14.08percent among middle, 27.94percent among secondary while among highly educated is 31.92percent. Area of residence and prevention methods are also significant as $p\text{-value}$ is less than alpha value, 37.78percent rural females consider that HIV/AIDS can be avoided by living with unaffected husband who has no other wife, while 62.22percent urban female think also like that. HIV/AIDS can be avoided by using condom is 38.05 among rural residents, while in urban residents this is 61.95percent. The percentage of rural respondents who consider that healthy looking person may have HIV is 39.48 and in urban residents this is 60.52percent. Prevention methods are different in urban areas as 29.04percent residents of major cities consider that HIV/AIDS can be avoided by living with unaffected husband who has no other wife, while this percentage is 70.96percent among the residents of other urban areas. The percentage of residents who consider that HIV/AIDS can be prevented by using condom correctly is 28.01 in major cities, while this is 71.99percent in other urban areas. The percentage of residents who consider that healthy looking persons may be HIV positive is 27.91 in major cities and it is 72.09 in other urban areas.

CROSS TABLE 4

		During Pregnancy			During Delivery			Through Breastfeeding		
		Yes	No	DK	Yes	No	DK	Yes	No	DK
Wealth index quintiles	Lowest	1,584	230	334	1,309	375	457	1,433	310	401
		8.31%	9.34%	10.98%	8.25%	8.325	11.08%	9.06%	6.465	10.385
	Middle	8,858	1,176	1,544	7,403	2,117	2,024	7,599	2,093	1,843
		46.48%	47.75%	50.74%	46.68%	46.97%	49.08%	48.05%	43.63%	47.72%
	Highest	8,617	1,057	1,165	7,147	2,015	1,643	6,784	2,394	1,618
		45.21%	42.92%	38.28%	45.07%	44.71%	39.84%	42.89%	49.91%	41.90%
	Total	19,059	2,463	3,043	15,859	4,507	4,124	15,816	4,797	3,862
Chi-square		62.56			55.79			105.96		
p-value		0.000			0.000			0.000		
Age groups	15-30	8,692	1,130	1,448	7,149	2,142	1,935	7,321	2,129	1,771
		45.61%	45.88%	47.58%	45.08%	47.53%	46.92%	46.29%	44.38%	45.86%
	31-45	9,236	1,185	1,445	7,773	2,092	1,973	7,570	2,383	1,873
		48.46%	48.11%	47.49%	49.01%	46.42%	47.84%	47.86%	49.68%	48.50%
	46+	1,131	148	150	937	273	216	925	285	218
		5.93%	6.01%	4.93%	5.91%	6.06%	5.24%	5.85	5.94%	5.64%
	Total	19,059	2,463	3,043	15,859	4,507	4,124	15,816	4,797	3,862
Chi-square		10.60			21.68			11.70		
p-value		0.101			0.001			0.069		
Education	None/Preschool	2,215	303	543	1,841	497	708	1,957	446	646
		11.62%	12.30%	17.84%	11.61%	11.03%	17.17%	12.37%	9.30%	16.73%
	Primary	3,083	372	657	2,592	664	849	2,703	640	758
		16.18%	15.10%	21.59%	16.34%	14.73%	20.59%	17.09%	13.34%	19.63%
	Middle	2,734	359	504	2,280	646	658	2,343	651	589
		14.34%	14.58%	16.56%	14.38%	14.33%	15.96%	14.81%	13.57%	15.25%
	Secondary	5,256	693	771	4,375	1,268	1,064	4,287	1,384	1,032
		27.58%	28.14%	25.34%	27.59%	28.13%	25.80%	27.11%	28.85%	26.72%
	Higher	5,769	736	568	4,769	1,432	845	4,524	1,676	837
		30.27%	29.88%	18.67%	30.07%	31.77%	20.49%	28.60%	34.94%	21.67%
Total		19,059	2,463	3,043	15,859	4,507	4,124	15,816	4,797	3,862
Chi-square		282.08			284.85			298.98		
p-value		0.000			0.000			0.000		
Area of residence	Rural	7,431	1,091	1,338	6,317	1,767	1,747	6,562	1,706	1,553
		38.99%	44.30%	43.97%	39.83%	39.21%	42.36%	41.49%	35.56%	40.21%
	All Urban	11,628	1,372	1,705	9,542	2,740	2,377	9,254	3,091	2,309
		61.01%	55.70%	56.03%	60.17%	60.79%	57.64%	58.51%	64.44%	59.79%
Total		19,059	2,463	3,043	15,859	4,507	4,124	15,816	4,797	3,862
Chi-square		47.06			10.74			54.46		

p-value		0.000			0.013			0.000		
Urban area bifurcation	Major Cities	3,242	424	501	2,682	740	746	2,568	875	722
		27.88%	30.90%	29.38%	28.11%	27.01%	31.38%	27.75%	28.31%	31.27%
	Other Urban	8,386	948	1,204	6,860	2,000	1,631	6,686	2,216	1,587
		72.12%	69.10%	70.62%	71.89%	72.99%	68.62%	72.25%	71.69%	68.73%
	Total	11,628	1,372	1,705	9,542	2,740	2,377	9,254	3,091	2,309
Chi-square		8.17			33.45			26.62		
p-value		0.043			0.000			0.000		

Cross table 4 presents the relationship between the demographic factors and the transmission of HIV to the children from mother.

Transmission of HIV/AIDS from Mother to Child

Transmission of HIV/AIDS from mother to child and wealth quartile are highly significant ($p\text{-value } 0.000 < 0.05$), 8.31percent of lowest wealth quartile females have knowledge that HIV can be transmitted to child during pregnancy, 46.48percent of middle wealth quartile know this mode of transmission, while this percentage is 45.21 among highest wealth quartile. The percentages of the female among lowest, middle and highest wealth quartile who know that HIV can be transmitted to a child during delivery are 8.25, 46.68 and 45.07 respectively. The knowledge that HIV/AIDS can be transmitted to a child through breast feeding is 9.06percent among lowest, 48.05percentamong middle and 42.89percent among the females belonging to the highest wealth quartile. The percentage of the female who have knowledge that HIV/AIDS can transfer from a mother to her child during pregnancy is 45.61 in the age group of 15-30, 48.68 in the age group 31-45 and 5.93 among the females of 46 and above age. The knowledge that HIV/AIDS can be transferred to a child from mother during delivery is 45.08percent among 15-30 age group, 49.01percent among 31-45 age group and only 5.91percent among the female of the age above 46 years. The percentage of the age group 15-30 who have knowledge that HIV/AIDS can be transferred to a child through breast feeding is 46.29, 47.86 in 31-45 and 5.85 in the above 46 years group. Schooling of the respondents and knowledge of transmission about HIV/AIDS are highly significant as the percentage of the females who are illiterate and have knowledge that HIV can transfer from a mother to her child during pregnancy is the lowest 11.62, this percentage goes on increasing as the schooling increases i.e. 16.18percent among primary, 14.34percent among middle, 27.58percent among secondary and 30.27percent among highly educated female. The percentage is also different about the knowledge that HIV can transfer from child to mother in

the female respondents of different schooling levels as 11.61percent illiterate females know about this mode of transmission, this percentage is 16.34, 14.38, 27.59 and 30.07 among primary, middle, secondary and highly educated females. About 12.37percent illiterate females have knowledge that HIV can transfer from mother to child through breast feeding. This mode of transmission i.e. through breast feeding is 17.09percent among primary, 14.81percent among middle, 27.11percent among secondary and 28.06percent among highly educated females. Area of residence and knowledge regarding the transmission of HIV and AIDS from mother to child are highly significant, as 38.99percent rural females have knowledge that HIV/AIDS can transfer from a mother to her child during pregnancy, while this percentage is 61.01 among urban females. The percentage of rural females who are informed about the transmission of HIV/AIDS from a mother to the child during delivery is 39.83, while in urban females this is 60.17. The knowledge about HIV/AIDS that it can transfer from a mother to her child, though breast feeding, is 41.49percent among rural residents and 58.51percent among urban residents. Among urban areas, there is also variation about the knowledge regarding transmission of HIV/AIDS, 27.88percent females living in major cities have knowledge that HIV can transfer to a child during pregnancy, while it is 72.12percent among the residents of other urban areas. The percentage among the residents of major cities is 28.11 who are aware about transmission of HIV to a child during delivery, while this is 71.89 in other urban areas. The percentage of the residents of major cities regarding the knowledge that HIV can transfer from a mother to a child, through breast feeding, is 27.75 while this percentage is 72.25 among the residents of urban areas.

Rationale for using Regression Analysis

The data collected and entered into SPSS fulfills all requirements of the regression analysis that are not highly robust to violations (there are several other assumptions and their extensions that are robust to violations such as normality of error distribution) and satisfying these assumptions is enough to apply regression on a data set.

- Normality of the data for the regression analysis.
- Linearity of the Regression function where the dependent and the independent variables have been expressed as a linear function.

- The above table shows how each variable and its related categories show the level of significance towards knowledge of HIV. These statistics totally comply with already mentioned results in cross tabulation. All the variables are significantly related to the knowledge of HIV. When it comes to the wealth index, it is significantly related to the knowledge of HIV. With the increase in wealth index, the knowledge about HIV also increases.

Variable	Sub-groups	coefficients	S.E	Sig.
Wealth index	Lowest	0.143	.506	0.023
	Middle	0.156	.442	0.017
	Highest	0.451	.446	0.000
Age Group	15-30	0.670	.591	0.001
	31-45	0.328	.361	0.000
	46+	0.012	.827	0.023
Education	Preschool	0.010	.345	0.032
	Primary	0.004	.605	0.029
	Middle	0.101	.324	0.021
	Secondary	0.234	.221	0.010
	Higher	0.710	.012	0.000
Area of residence	Rural	0.121	.111	0.001
	All Urban	0.456	.313	0.000
Urban bifurcation	Major cities	0.231	.432	0.014
	Other urban	0.456	.221	0.012

- Similarly, the age group of the females is also related to the comprehensive knowledge of HIV. Increase in the age decreases the knowledge of HIV. The P-value shows that it is highly significant with the middle age group. However, for above 46 years of age, it is significant but to a very low level. So with the increase in the age, the comprehensive knowledge of HIV decreases.
- Education is also an important socio-demographic component that is significantly related to the knowledge of HIV. Higher level of education is significant with the comprehensive knowledge of HIV as the p-value is 0.000. The other sub-categories are also related to the knowledge of HIV but it is on the lower side. So the regression analysis shows that with increase in educational level, the comprehensive knowledge of HIV increases.

- Similarly, the area of residence is also significantly related to the knowledge of HIV. The p-value shows how the knowledge of HIV is on the higher side in urban areas. Similarly, other urban areas are also on the higher side of the knowledge of HIV.

DISCUSSION

The knowledge of the HIV and how it is affected by the socio-demographic factors are very important. The age group is very important in this regard. The middle aged people are more knowledgeable with the disease, its occurrence and the measures avoid it. But the people above the age of 46 have very little knowledge about the diseases. The current study findings show that there is a significant difference between the rural and urban settings with respect to the knowledge of HIV and its spread. The urban people are more aware of the facts about HIV and other related concepts. Similarly, education is very important when it comes to the knowledge about HIV and the conception regarding the prevalence and spread of the disease. Highly educated people are more aware of the HIV, its prevalence and even how to avoid the HIV. The findings of the currents study strongly emphasize the need of a comprehensive awareness campaign throughout the country. Elizabeth and Asaduzaman also concluded from their study that increase in the HIV is due to unawareness and there should be more comprehensive policy making in the area. NACP is specially formulated to address this issue in Pakistan. The focus of the campaign should be on the rural areas and uneducated people. Highly educated people and the people living in urban residence are more aware about the HIV, its prevalence and further transmission. This may be due to the exposure to the modern media equipment and modern health facilities. Susan (2007) had similar findings that people visiting social networking sites have more knowledge about the HIV/AIDS. The current situation of the HIV knowledge and discrepancy among different groups is mainly due to the exposure to the media and education. Rural people and above 46 aged people have little access to the new sources of media and knowledge and perhaps that is the reason why they have less knowledge about it. On the other hand urban residents and educated people have easy access to the media and that is why more knowledge about HIV and its prevalence have and how to take precautionary measures against it.

It is suggested for the future researches that both genders should be included in the research process to make a more comprehensive study. Both public and private institutions should be included to make the people aware

regarding the awareness of HIV. Based on the findings of the study, it is recommended that government level initiatives should be taken to reduce the prevalence and transmission of HIV. Additionally, in terms of future research, additional variables and analysis could be used, for example respondent's access to health care, focus on intra-urban or rural variables exclusively analyzed and country infection prevalence rates. By looking at and comparative prevalence rates, for example, some of this study's findings could yield more meaningful results.

The current study is very important and has significant benefits due to a large sample size and availability of the MICS data. The data had some missing values but due to large sample size this could not make the findings questionable. Pakistani environment and political conditions make it difficult to collect so much data but MICS data made it easy for the researcher. Another potential benefit of the research is that the survey was simple in nature.

The major limitation of the current study was that the data was collected by only female and no male was included. Hence, the gender proportion is the major limitation of the study. The data only tells the facts and figures being a quantitative study and no qualitative data was collected, therefore, the in-depth understanding could not be gathered. The nature of some of the data under initial consideration was incomplete or not useable due to extreme missing values (upward of 80percent), which limited the scope of variables included. Due to the nature of the MICS itself, the questions regarding HIV were fairly limited and the questionnaire itself is limited.

SUMMARY OF THE RESEARCH

Background: The number of HIV cases is increasing in Pakistan. There are many responsible factors like unhealthy sexual and medical practices and drug addiction. The lack of knowledge and awareness is also a contributing factor. Socio-demographic factors are also important to determine the knowledge about HIV prevalence and transmission.

Methods: The current study used the Multiple Indicator Cluster Survey 2011 to estimate the impact of socio-demographic factors in determining the knowledge about HIV. The relevant variables and the other parameters were excerpted from both *pdf* and *spss* files of MICS. Bivariate / cross tabulation was used to determine the levels of significance (*p* value) between the hypothesized variables.

Results: Age and wealth index showed highly significant relationship ($p < 0.0000$) in determining the knowledge of HIV. Majority of the people aged 15-30 have heard of HIV, whereas not a good number of people with 46+ ages have heard of HIV. The people belonging to the “rich” group as compared to the “poor” had high percentage for their awareness (heard of) of HIV and likewise, the misconception of the rich about the spread of HIV was low as compared to the poor. Moreover, the increasing level of education showed a decreasing trend of misconception about the spread of HIV.

Conclusions: Though, the results of the study indicated a highly significant relationship between the socio-demographic factors and knowledge of HIV, there is a grim need to launch awareness campaigns by the public and private sectors/organizations to enhance the level of knowledge of masses at a large scale.

CONCLUSION OF THE STUDY

The current study concludes that a significant relationship does exist between the socio-demographic factors and the knowledge of HIV among the women of reproductive age. Wealth index and education are the factors that have great impact on the knowledge of HIV. Most of the respondents have misconception that HIV can spread just by touching, sharing food and have idea about the impact of supernatural in the occurrence of this disease. But these concepts also vary with education and economic well-being. It is suggested that future research should be conducted especially in the area of age and education to better understand the nature of HIV and how it spreads.

LIMITATIONS

Following is the brief scenario of the limitations of the current study:

The study is based on the female respondents of the particular age group, hence, the findings cannot be generalized to both male and female population.

The study is also restricted to a few variables like residential areas, age and wealth quartile. However, there are other variables that have bearing on the awareness about HIV. Hence, the current study only looks at the above mentioned variables.

The study is, although, based on the primary data, it only gives the apparent information. The study lacks in-depth understanding of the topic.

STRENGTHS OF THE STUDY

The study has some potential strengths and benefits that make this study a more policy oriented.

The sample size of the study is substantial that is a major strength of the study. Hence, the findings are more generalizable to the women of the reproductive age.

The MICS survey is being carried out by professionals in the relevant fields which makes the data more valid and reliable.

IMPLICATIONS

Following are the important implications that the current study focuses on.

The findings of the study are very helpful for health providers and policy makers as it identifies that which segment of the society needs more attention regarding awareness of the HIV. The study signifies that age group and wealth are important indicators regarding the awareness of the disease, hence, the policy makers can take benefit from the study and focus on a particular segment of the society.

Media campaigns can be initiated in a more directed way to raise awareness about HIV. Both print and electronic media can be used to raise this information. As the study showed which segment has less knowledge, hence newspapers, digests and others such sources can be more fruitful in raising the awareness.

RECOMMENDATIONS

Following are the important recommendations regarding the future research in the area:

- Future research may involve both the genders which would enable the researcher to draw a more representative and generalized findings.
- The current study has used only the women of reproductive age as the respondents. However, future researchers may involve

respondents of different age groups like students and other professionals to investigate the issue more comprehensively. This would fetch more valid and reliable information.

- Future studies may involve more variables to determine the awareness regarding HIV.
- Qualitative part may be included in the future studies which would give an in-depth understanding of the topic. Qualitative information would help in initiating the interventions in a more comprehensive way.

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