

Knowledge and Attitudes of The Population in Gezira State, Sudan, About HIV/AIDS

Elsadig Y. Mohamed¹, Zeidan A. Zeidan², Taha A. Almokashfi², Hyder AboAhmed², Siham A. Balla², Sawsan M. Abdalla³

1. Ministry of Health, Gedarif State, Sudan

2. Faculty of Medicine, University of Khartoum, Sudan

3. Faculty of Medicine, The National Ribat University, Sudan

Correspondence:

Elsadig Yousif Mohamed, Tel. 00249-912328928, E-mail: elsadigoo@gmail.com

ABSTRACT

Background: The objectives of the study were to i) to assess people's knowledge of HIV/AIDS in terms of conditions related to infection, modes of transmission and prevention, in Gezira state, Sudan and ii) to assess people's attitudes towards HIV-infected individuals. **Methods:** The study design was a descriptive, cross-sectional, community-based study conducted in Gezira state, Sudan. The population was made up of adults of both sexes found in four areas in the state during April 2009. Data was collected by a pre-coded questionnaire and was analyzed by the computer using SPSS. **Results:** Knowledge of the population in Gezira state about HIV/AIDS was favorable. Good, average and poor knowledge constituted 75.5%, 14.8% and 9.7% respectively. The younger age group had more knowledge about HIV/AIDS than the older age group (76.2% versus 74.3%). Females had better knowledge than males (76.5% and 74.4%). Those with positive attitudes towards HIV/AIDS were (43.8%). This was related to the level of knowledge; those who had good, average and poor knowledge showed positive attitudes of 49.5%, 31% and 18.9% respectively. Females had more positive attitudes towards people living with AIDS (PLWHA) than males (47.0% versus 40.1%). Positive attitudes of population towards PLWHA increased according to the level of education, the university graduates were more tolerant (56%) than the basic/secondary (43.2%) and the illiterates (22.9%). **Conclusion:** Knowledge of the population in Gezira state about HIV/AIDS was good while positive attitudes towards the disease was low. The level of knowledge was higher and attitudes were better among the younger age group, the more educated, the females, and the married population. Positive attitudes increased as the level of HIV/AIDS knowledge increased.

INTRODUCTION:

It was estimated that 92,000 persons were infected with HIV/AIDS in the East Mediterranean Region in 2004 and the number of deaths increased by 6 folds since early 1990s^[1]. HIV/AIDS is a public health problem in the Sudan. The first individual with HIV/AIDS was diagnosed in 1986. Since then the prevalence of individuals living with HIV/AIDS (PLWHA) is increasing and by 2001 a total of 4004 cases were reported. In 1987, Sudan National AIDS Control Program (SNAP) was established. During the period 1987 – 1998, two short and two medium term plans were formulated. These plans were intended for the period 2003 – 2007 in order to assess the situation and to collect the necessary information for the formulation of a national plan. SNAP decided to undertake a national survey that would assess the prevalence of HIV/AIDS in the

country and provide information about knowledge, attitudes, practice and behaviour in the different sectors of the community. The survey was also intended to assess the commitment of the different government ministries, national and international organizations and other civil society organizations and whether they have specific plans or activities addressing the HIV/AIDS problem^[2].

In Sudan adults and children with advanced HIV infection receiving antiretroviral therapy were 2.97% and 4.39%^[3]. False beliefs about HIV transmission were common as were indicators of social stigma^[4]. More than 70 percent of women in the 15-49 age group in Sudan had heard about AIDS and only half of them knew that it could be transmitted by sexual intercourse and just around 7.5 percent identified use of condom as a preventive measure^[5].

The objectives of the study were to i) to assess people's knowledge of HIV/AIDS in terms of conditions

related to infection, modes of transmission and prevention, in Gezira state, Sudan and ii) to assess people's attitudes towards HIV-infected individuals.

METHODS:

Study design:

The study was a descriptive, cross-sectional, community-based study to assess knowledge and attitudes of population in Gezira state about HIV/AIDS and to determine their relation with some social factors.

Study area and population:

Gezira state is located in central Sudan, occupying the tract between the White and the Blue Niles south of their convergence at Khartoum. Wad Medani is the state's capital. It has an area of 27,549 km² and population size of 3,529,992^[6].

The study population constituted those found in their settings during the study in April 2009. Both sexes were enrolled and children below the age of 15 years were excluded from the study.

Sampling:

The selected areas were Tabat Alsheikh Abdelbagi, Alkamlin, Altikeana and Arbagi. Sample size was calculated by the following formula:

$$n = Z^2 pq / DE / d^2$$

n is the sample size.

Z is the critical ratio

P is the proportion of the target population estimated to have a particular characteristic.

$$q = 1 - p$$

d = the degree of accuracy desired or the margin of error tolerated.

DE = Design effect = 2

$$n = 1.96 \times 1.96 \times 0.5 \times 0.5 \times 2 / 0.05 \times 0.05$$

Sample was calculated as 768

Data collection and analysis:

Data was collected by a pre-coded and pre-tested questionnaire. The pre-test was done in a rural area of Khartoum state. Difficult to understand questions were changed and pretested once again.

Data was analysed by the computer using SPSS, version 13, software. The knowledge questions gave 3 options, "true", "false" and "don't know". Incorrect answers and "I don't know" answers were given a zero score, while 1 point was given to each correct answer. The total score ranged from 0 to 14. The scores were arbitrarily classified at 3 levels of knowledge: high (score of 11 and above), average (score of 6 to 10) and poor (score of 5 and less). Regarding the attitude questions, 0 to 1 points were assigned for each answer and the total score ranged from 0 to 10. Attitude scores were arbitrarily

classified at 2 levels: positive (score of 5 and above), and not negative (score of less than 5).

Descriptive statistics were used such as frequency, mean and standard deviation. Comparisons between groups were made using the Chi-square test. The level of significance was determined at 95%, P value <0.05 was considered significant and all tests were 2-sided.

Ethical considerations:

Verbal consent was taken from the respondents. Ethical clearance was obtained from the Federal Ministry of Health. Objectives and expected outcome of the research were explained to the participants and their right not to participate in the study was explained. Respect, beneficence and confidentiality of information obtained were ensured.

RESULTS

The number of questionnaires distributed were 768; 765 were received, response rate was 99.6%. Knowledge of the population in Gezira state about HIV/AIDS was favourable. Good knowledge (gave 11 to 14 correct answers about definition, transmission and prevention of HIV/AIDS) constituted 75.5%, average knowledge (were able to give 6-10 correct answers about definition, transmission and prevention of HIV/AIDS) constituted 14.8%, and poor knowledge (gave less than 6 correct answers about definition, transmission and prevention of HIV/AIDS) constituted 9.7% as shown in table (1). Table (2) shows that the younger age group had more knowledge about HIV/AIDS than the older age group (76.2% of the younger age group gave 11 to 14 correct answers about HIV/AIDS versus 74.3% for the older age group). Females had better knowledge of HIV/AIDS than males. Good knowledge among females and males constituted 76.5% and 74.4% respectively. The level of knowledge increased according to the level of education; which was higher among university graduates and above (95.5%) followed by basic and secondary (75.1%). Illiterates acquired the least level of knowledge (41.3%). It was shown that the working population had better knowledge than those who were not working. Good knowledge among the working and the non working population were 78.2% and 72.9% respectively. The study showed that the level of knowledge as regards HIV/AIDS were higher among the married population (78.3%) followed by the single (75.7%). The divorced and the widows constituted the least level of knowledge (59.2%). Attitudes towards HIV/AIDS improved as the level of knowledge increased. Positive attitudes towards HIV/AIDS for those who had good, average and poor knowledge was 85.4%, 10.4% and 4.2% respectively.

Table (1): HIV knowledge among the population in Gezira state

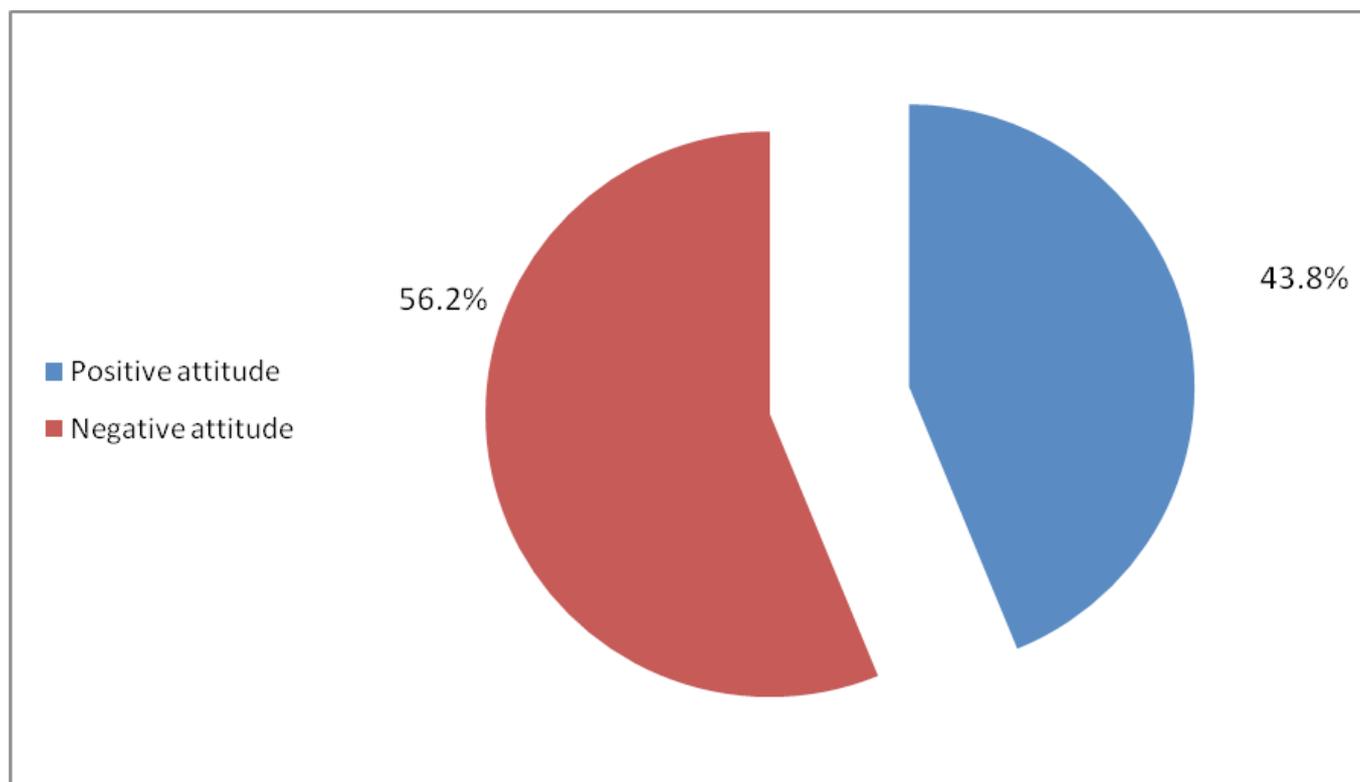
Level of knowledge	No.	%
Good (able to answer 11-14 correct questions)	578	75.5
Average (able to answer 6-10 correct questions)	113	14.8
Poor (able to answer 0-5 correct questions)	74	9.7
Total	765	100

Table (2): Relation between level of knowledge and social factors

Social factors	Level of knowledge			Total	Statistics
	Poor	Average	Good		
Age: Young (15-35 yrs) Old age (more than 35)	38 (7.6%) 34(13.4%)	81 (16.2%) 31 (12.3%)	382 (76.2%) 188 (74.3%)	501 (66.5%) 253 (33.5%)	P=0.02
Gender: Male Female	22 (6.3%) 52 (12.6%)	68 (19.3%) 54 (10.9%)	262(74.4%) 316(76.5%)	352(46%) 413(54%)	P=0.000
Education: Illiterates Basic/secondary University/ above	44(40.4%) 28(6.2%) 2(1%)	20(18.3%) 85(18.7%) 7(3.5%)	45(41.3%) 341(75.1%) 191(95.5%)	109(14.3%) 454(59.5%) 200(26.2%)	P=0.000
Occupation: Working Not working	28(8.1%) 46(11.1%)	47(13.7%) 66(16%)	269(78.2%) 301(72.9%)	344(45.4%) 413(54.6%)	P=0.212
Marital stated Single Marr Divorced/widowed	44(10.7%) 22(7.3%) 8(16.3%)	56(13.6%) 43(14.3%) 12(24.5%)	312(75.7) 235(78.3%) 29(59.2%)	412(54.2%) 300(39.4%) 49(6.4%)	P=0.041
Attitude towards PLWHA Positive Negative	14 (4.2%) 60(14.0%)	35(10.4%) 78(18.1%)	286 (85.4%) 292(67.9%)	335(43.8%) 430(56.2%)	P=0.000

Figure (1) shows that those respondents who had positive attitudes (scored 5 -10 positive attitudes) towards HIV-infected people were (43.8%) and those with negative attitudes (scored less than 5 positive attitudes) constituted 56.2%. Table (3) shows the relation between attitudes of respondents towards HIV/AIDS and social factors, the younger population had more positive attitudes towards PLWA than the older population (46.3% versus 39.5%). Females had more positive attitudes towards PLWHA than males (47.0% versus 40.1%). Positive attitudes of the population

towards PLWHA increased as the level of education increased, university graduates had more positive attitudes (56%) than the basic/secondary respondents (43.2%) and the illiterates (22.9%). Results showed that the non working population had more positive attitudes towards HIV/AIDS than the working population (44.3% versus 42.2%). As regards marital status, the married had more positive attitudes towards PLWHA, followed by the single (47.3% versus 42.5%). The divorced and the widows had the least positive attitudes towards PLWHA (30.6%).

Figure (1): Attitudes towards HIV/AIDS among the population in Gezira state, N=765**Table (3):** Relation between attitudes towards HIV/AIDS and social factors - Gezira state

Social characteristics	Attitudes		Total	Statistics
	Positive	Negative		
Age: Young (15-35 yrs) Old age (more than 35)	232 (46.3%) 100(39.5%)	269 (53.7%) 153 (60.5%)	501 (66.5%) 253 (33.5%)	P=0.077
Gender: Male Female	141 (40.1%) 194 (47%)	211 (59.9%) 219 (53%)	352(46%) 413(54%)	P=0.055
Education: Illiterates Basic/secondary University/ above	25(22.9%) 196(43.2%) 112(56%)	84(77.1%) 258(56.8%) 88(44%)	109(14.3%) 454(59.5%) 200(26.2%)	P=0.000
Occupation: Working Not working	145(42.2%) 183(44.3%)	199(57.8%) 230(55.7%)	344(45.4%) 413(54.6%)	P=0.551
Marital stated Single Marr Divorced/widowed	175(42.5%) 142(47.3%) 15(30.6%)	237(57.5%) 158(52.7%) 34(69.4%)	412(54.2%) 300(39.4%) 49(6.4%)	P=0.072

DISCUSSION

The study highlighted the relation of social factors of the population with knowledge and attitudes of HIV/AIDS. Although many respondents had wrong beliefs about HIV/AIDS [7], knowledge of the population in Gezira state about HIV/AIDS was favourable. Good, average and poor knowledge constituted 75.5%, 14.8% and 9.7% respectively. These findings are higher than reports from the Islamic Republic of Iran, Sudanese immigrants in Denmark and students in India where the level of knowledge was 49.2 %, 70% and 66% respectively [8, 9,10]. Population in Gezira state had a good socio economic status in general due to the effect of Gezira scheme which raised the standard of living and education in the area.

Results showed that the younger age group acquired better knowledge than the older age group. The relation between knowledge and age is significant (Chi square=7.851, P value = 0.02). These findings are not in agreement with a study conducted in Malaysia where the older age group had more knowledge than the younger age group^[11]. In our case the young population had better access to knowledge than the older population who missed this opportunity in most cases, education in this area is now accessible for all young population.

Females in this study acquired 76.5% level of knowledge, this was better than the level of knowledge reported by Sudan Household Survey (SHHS) 2006 which reported a level of knowledge of 70.4%. This may be due to the improvement in knowledge which occurred during the last five years where Gezira state is one of the states with good socio- economic status compared to other parts of the country^[5].

It was shown that females acquired better knowledge of HIV/AIDS than males (76.5% versus 74.4%). The relation between HIV/AIDS knowledge and gender is significant (Chi square= 17.133, P=0.000). These findings were not in agreement with other studies where males had better knowledge than females^[12,13]. In this case females in Gezira area had a good chance in improving their knowledge as men used to go to the farms, besides availing radios and television in almost all the houses in the state facilitates dissemination of knowledge.

Results showed that level of knowledge increased according to the level of education. Level of HIV/AIDS knowledge was higher among university graduates (95.5%) followed by basic and secondary (75.1%). Illiterates acquired the least level of knowledge (41.3%). The study shows a significant relation (Chi square=177.691, P= 0.000) between

level of education and HIV knowledge^[12].

According to this study, it was shown that the working population had better knowledge than those who were not working^[7,12]. The relation between HIV/AIDS knowledge and occupation is not significant (Chi square=3.106, P=0.212). Work is related to education and contact during work also enables people to share knowledge and experiences.

The results showed that the married had better knowledge followed by the single population. The widows and the divorced had the least knowledge, and the relation between HIV/AIDS knowledge and marital status (Chi square=9.975, P=0.041) is significant^[14].

The study indicated that attitudes of the population towards HIV/AIDS were not satisfactory^[7]. Those respondents who had positive attitudes towards the disease constituted 43.8%. These findings are less than what was reported by Ramezankhani et al. about the attitudes of students in Islamic Republic of Iran which showed that four-fifths of the students had positive attitudes towards HIV/AIDS^[15].

The study revealed that the young age group had more positive attitudes towards PLWHA than the old age group, but the relation (Chi square=3.137, P=0.077) is not significant^[6]. The study found a significant relation between attitudes towards HIV/AIDS and education level, people with higher level of education had more positive attitudes towards HIV-infected individuals (Chi square=31.460, P=0.000) than those with lower level of education^[8,16]. The highly educated had better knowledge of the aetiology and transmission of the disease; thus they are more likely to show sympathy towards the patients.

Results revealed that females had more positive attitudes towards HIV/AIDS than males (47% versus 40.1%) but the relation between gender and attitudes towards HIV/AIDS (Chi square= 3.693, P= 0.055) is not significant^[17].

Attitudes of the population in Gezira state towards HIV/AIDS was better among the non working than the working population but the relation between occupation and attitudes towards HIV/AIDS (Chi-Square = 0.356, P=0.551) is not significant^[7]. The married had positive attitudes towards PLWHA followed by the single. The divorced and the widows had the least tolerance. The relation between marital status and attitudes towards HIV/AIDS is not significant (Chi-Square = 5.272, P= 0.072). These findings are not in line with a study conducted in Bangladesh where a significant relation was found between attitudes towards HIV/AIDS and marital status^[18].

CONCLUSION

The study concluded the following:

Knowledge of the population in Gezira state about HIV/AIDS was good (75.5% of the population were able to answer from 11 to 14 correct questions about HIV/AIDS).

Level of knowledge about HIV/AIDS was higher among the younger age group, the more educated, the females, the working force and the married population.

Attitudes of the population in the Gezira state towards people living with HIV/AIDS "PLWHA" were negative, only 43.8% had positive attitudes.

The younger age group, the females, the non working, the married had more positive attitudes towards people living with HIV/AIDS.

Positive attitudes of the population towards PLWHA increased as the level of education increased; university graduates had more positive attitudes, followed by the basic/secondary graduates. The illiterates had the least positive attitudes towards the disease.

Positive attitudes of the population towards HIV/AIDS increased as the level of disease knowledge increased.

RECOMMENDATIONS

On the bases of the above findings, the study recommends the following:

Raising awareness programs are advised to be more directed towards the older age group, the males, those with no jobs, the divorced and the widows.

It is advisable to give more attention towards attitudes towards HIV/AIDS in the agenda of the State AIDS Control Program and this goal can be achieved through increasing the knowledge of the population about HIV/AIDS.

Efforts to improve attitudes towards people living with HIV/AIDS "PLWHA" is recommended to be directed to the older age group, the males, the poorly educated, the divorced and the widows as well as the working population.

References:

1. Lake S, Wood G. *Combating HIV/AIDS in eastern Sudan: The case of preventive action*. UK: Ockenden International; 2005.
2. Sudan National AIDS Control Program (SNAP). *The national strategic plan for the prevention and control of HIV/AIDS in the Sudan, 2003 – 2007*. Khartoum, Sudan: Federal Ministry of Health; 2003.
3. Joint United Nation Programme on HIV/AIDS (UNAIDS). *UNAIDS report on the global AIDS epidemic 2010*. [online] 2010. Available from: http://www.issuu.com/unaid/docs/unaid_globalreport_2010. [Accessed on 2010 Apr 14].
4. United Nation Development Program (UNDP). *Fighting HIV/AIDS in Sudan*. [online] 2010. Available from: <http://www.sd.undp.org/projects/hiv3.htm>, [Accessed on 2010 Apr 14].
5. Government of Sudan. *Sudan Household Health Survey SHHS and Millennium Development Goals (MDG) Indicators, Sudan, 2006*. Indicators Number 69, 71 and 72. [online] 2006. Available from: http://www.unicef.org/sudan/health_4284.html. [Accessed on 2010 Apr 14].
6. Central Bureau of Statistics (CBS). *Sudan Census April 2008*. Khartoum, Sudan: Government of Sudan, Central Bureau of statistics; 2008.
7. Sidig A, Mahgoub A, Hussein A. A study of Knowledge, Attitude, Practice of HIV/AIDS and prevalence of HIV/AIDS among tea sellers women in Khartoum State (April 2004, May 2005). *Sudanese Journal Public Health*. 2009; 4(1): 214-224.
8. Hedayati-Moghaddam MR. Knowledge of and attitudes towards HIV/AIDS in Mashhad, Islamic Republic of Iran. *East Mediterr Health J*. 2008; 14(6): 1321-1332.
9. Lazarus JV, Himedan HM, Østergaard LR, Liljestrand J. HIV/AIDS knowledge and condom use among Somali and Sudanese immigrants in Denmark. *Scand J Public Health*. 2006; 34(1): 92-99.
10. Shah M, Ambalam S. *Knowledge of HIV/AIDS prevention and transmission among tenth and twelfth grade students in Delhi, India*. Paper presented at: 15th International Conference on AIDS; 2004 Jul 11-16; Bangkok, Thailand. Abstract Number: C12660.
11. Wong LP, Chin CK, Low WY, Jaafar N. HIV/AIDS-Related Knowledge Among Malaysian Young Adults: Findings From a Nationwide Survey. *Medscape J Med*. 2008; 10(6): 148.
12. Li X, Lin C, Gao Z, Stanton B, Fang X, Yin Q, et al. HIV/AIDS knowledge and the implications for health promotion programs among Chinese college students: geographic, gender and age differences. *Health Promot Int*. 2004; 19(3): 345-356.
13. Al-Serouri AW, Takioldin M, Oshish H, Aldobaibi A, Abdelmajed A. Knowledge, attitudes and beliefs about HIV/AIDS in Sana'a, Yemen. *East Mediterr Health J*. 2002; 8(6): 706-715.
14. Chen J, Shengli C, Choe MK. Who has correct information and knowledge about HIV/AIDS in China? *Asia-Pacific Population Journal*. 2003; 18(4): 32.

15. Ramezankhani A et al. Evaluations of students' knowledge and attitudes towards AIDS in Tehran public high schools. Paper presented at SEAMEO-UNESCO Education Congress and Expo: Adapting to changing times and needs, 27-29 May 2004, Bangkok, Thailand.
16. Tavoosi A, Zaferani A, Enzevaei A, Tajik P, Ahmadinezhad Z. Knowledge and attitude towards HIV/AIDS among Iranian students. *BMC Public Health*. 2004; 4: 17.
17. Al-Ghanim SA. Exploring public knowledge and attitudes towards HIV/AIDS in Saudi Arabia. A survey of primary health care users. *Saudi Med J*. 2005; 26(5): 812-818.
18. Rahman MM, Islam AZ, Islam MR. Determinants of knowledge and awareness about AIDS: Urban - Rural differentials in Bangladesh. *The International Journal of Health*. 2009; 9(2).