

## Knowledge and Attitudes of Population Towards HIV/Aids in Four States, Sudan

Elsadig Y. Mohamed<sup>1</sup>, Zeidan A. Zeidan<sup>1\*</sup>, Siham A. Balla<sup>1</sup>, Taha A<sup>1</sup>,  
Imtinan Khalid Hamid<sup>1</sup>

### ABSTRACT

**Back ground:** HIV/AIDS is a public health problem in the Sudan. The country is the most severely affected in North Africa and the Middle East with an estimated 500,000 people living with HIV/AIDS. The objectives of the study were to determine knowledge and attitude of the local population in selected states about HIV/ AIDS and to determine the relation between knowledge and attitude towards HIV/AIDS and associated social factors.

**Methodology:** Design was descriptive, cross-sectional, community- based study conducted in Gezira, Sinnar, River Nile and Northern states. The population was those found in their settings during the visits in April 2009. Both sexes were enrolled and children below the age of 15 years of both sexes were excluded from the study. Data were collected by a pre- coded and pre -tested questionnaire and were analyzed by the computer using SPSS, version 13, soft ware.

**Results:** Knowledge of the population in the selected four states about HIV/AIDS was favorable (73%). Tolerant attitude towards HIV-infected people was low (40%). Results showed that males acquired better knowledge than females (76.2% versus 71.8%) but females were more tolerant towards HIV/AIDS than males (42% versus 37.4%). Results showed that HIV/AIDS Knowledge increased as the educational level increased. Level of knowledge was higher among university graduates (92.6%) followed by basic and secondary (76.7%). Illiterates acquired the least level of knowledge (42.4%). The study showed that tolerance of population towards PLWHA increased according to the level of education. The university graduated was more tolerant (55.1%) than the basic/secondary (40.5%) and the illiterates (21.9%). It was shown that the single population was more tolerant towards PLWHA, followed by the married, the divorced and the widowed constituting 41.6%, 40.4%, 31.4% and 25% respectively.

**Conclusion:** The study concluded that, level of knowledge about HIV/AIDS of the population in the selected states was good. Level of knowledge among males, the working force and the single population was higher than the females, those without jobs and the married. Level of HIV/AIDS knowledge increased according to the level of education, was higher among university graduates followed by basic / secondary and Illiterates. Attitude of the population in the selected states towards people living with HIV/AIDS "PLWHA" was low, only 40% had more tolerant attitude. Females, the highly educated and the working population were more tolerant towards HIV/AIDS than males, the less educated, and the nonworking population.

**Keywords:** PLWHA, heterosexual, Gezira.

**I**n the East Mediterranean Region HIV/AIDS is increasing. It was estimated that 92000 were infected in 2004 and the number of deaths increased by 6 folds since early 1990s<sup>1</sup>. HIV/AIDS is a public health problem in the Sudan. The first individual with HIV/AIDS was diagnosed in 1986.

1. Department of community medicine

\*The correspondent: Associate Professor, Faculty of medicine, U of K. E.mail: drsiedan@gmail.com

Since then the prevalence of individuals living with HIV/AIDS (PLWHA) is increasing and by 2001 a total of 4004 individuals living with HIV/AIDS 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, attitude, practice and behavior 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. As a collateral outcome of the survey, it is expected that an opportunity will be provided for building the capacity of the personnel in the HIV/AIDS control units in the states<sup>2</sup>.

According to the national survey conducted by the Sudan National AIDS Programme SNAP in 2002, Sudan is the most severely affected country in North Africa and the Middle East with an estimated 500,000 people living with HIV/AIDS, and mostly in need of antiretroviral therapy (ART). Despite the fact that the epidemiological data are limited, it was believed that the country is in the early stages of a generalized HIV/AIDS epidemic, with an almost exclusively heterosexual transmission pattern. The adult prevalence rate of HIV/AIDS has been estimated at 1.6%, with specific population group prevalence rates ranging from 0.5% to 2.5% in the northern part of the country. The 2002 survey showed a low awareness of HIV/AIDS, with only 53% of the population being aware of the sexual transmission risk of HIV/AIDS. It has been reported that 0.5% limited sentinel surveillance testing during 2004 yielded prevalence rates of 0.95% (18/1900) among pregnant women, 1.9% (9/465) among symptomatic STD patients, and 2.3% (33/1436) among TB patients. In Sudan false beliefs about HIV transmission were common as were indicators of strong stigma<sup>3</sup>.

The objective of the study was to determine knowledge and attitude of the local population in four states in Sudan about HIV/AIDS and associated social factors.

### Methods:

Descriptive, cross-sectional, community-based study was designed to explore knowledge and attitude of the local population in the selected states about HIV/AIDS.

Sudan has an estimated population size of 36 million people with an annual population growth rate of 2.6 %. Of the total population, 63% lives in rural scattered areas, 29% in urban areas and Less than 8% as nomads<sup>3,4</sup>.

The study was conducted in four states: Gezira, Sinnar, River Nile and Northern states. In Gezira state, the selected areas were Tabat Alsheikh Abdelbagi, Alkamlin, Altikeana and Arbagi. In Sinnar state the selected areas were Aldindir, Alsouki, Wad Alabas and Mairno. The selected areas in River Nile state were Gambarat, Kaboshia, Housh Banaga, and Elmestikab. In the Northern state, the selected areas were Korti, Alzooma, Ameri and Nori.

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

Data were collected by a pre-coded and pre-tested anonymous questionnaire. The pre-test was done in rural area of Khartoum state. Difficult to understand questions were changed and the pre test was done again. Data were collected by the fifth year student of the Faculty of Medicine, University of Khartoum during their rural residency. The students were trained about how to fill the questionnaire.

Data were analysed by the computer using SPSS, version 13, soft ware. The knowledge questions gave three options, "true", "false" and "don't know". Incorrect answers and "I don't know" answers were given a zero score, while one point was given to each correct answer. The total score ranged from 0 to 14. The scores were arbitrarily classified at three levels of knowledge: high (score of 11 and above), moderate (score of 6 to 10) and low (score of 5 and less). Regarding the attitude questions, 0 to 2 points were assigned for each answer and the total score ranged from

0 to 10. Attitude scores were arbitrarily classified at three levels: tolerant (score of 8 and above), neutral (score of 4 to 7) and less tolerant (score of 3 and less).

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) and all tests were 2-sided.

A 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 to them. Respect, beneficence and confidentiality of information obtained were ensured.

**Results**

Knowledge of the population in the selected four states about HIV/AIDS was favorable. Good, average and poor knowledge

constituted 73%, 13.2% and 13.2 respectively, (Figure 1).

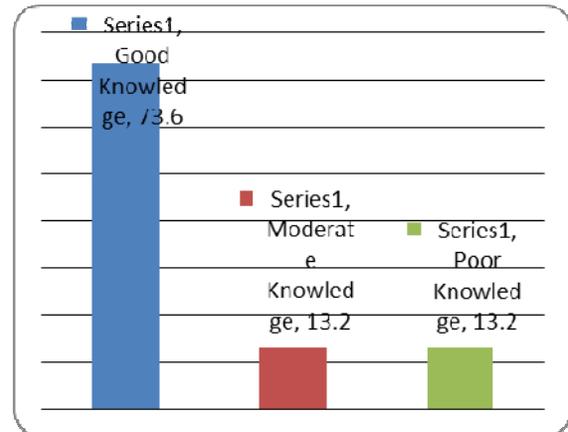


Figure1. Percentage (%) distribution of HIV/AIDS knowledge among study population in four states in the Sudan. 2010.

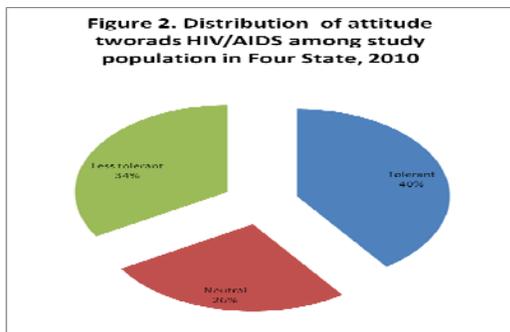
The highest knowledge was in River Nile state (76.4%), followed by Gezira, the Northern and Sinnar states constituting 76.1, 71.3% and 71% respectively, (Table 1).

Table: Level of knowledge about HIV/AIDS among population in the selected states

State	Knowledge			Total
	Good	Moderate	Poor	
River Nile state	647(76.4%)	105(12.4%)	95(11.2%)	847(25.5%)
Gezira state	583(76.1%)	105(13.7%)	78(10.2%)	766(23%)
Northern state	608(71.3%)	133(15.6%)	112(13.1%)	853(25.6%)
Sinnar state	612(71%)	96(11.1%)	154(17.9%)	862(25.9%)
Total	2450(73.6%)	439 (13.2%)	439(13.2%)	3328(100%)

Chi square= 32.052, P= 0.000, Significant.

The respondents who had more tolerant attitudes towards HIV-infected people were (40%), neutral and less tolerant attitudes constituted (26.5% and 33.5%) respectively. (Figure 2).



Population of Gezira state showed more tolerance (43.5%) towards PLWHA than the other states, followed by Sinnar, the Northern and River Nile states (42.7%, 39.4% and 34.8% respectively (Table 2).

Males acquired better knowledge than females (76.2% versus 71.8%). Poor knowledge among females and males was (15.6% and 9.7%) respectively.

The females were more tolerant towards HIV/AIDS than males (42% versus 37.4%).

The level of knowledge increased according to the level of education. Level of HIV/AIDS knowledge was higher among university

Table (2). Attitude of population in the selected states towards HIV/AIDS

State	Attitude			Total
	Tolerant	Neutral	Less tolerant	
Gezira state	333(43.5%)	224(29.2%)	209(27.3%)	766(23%)
Sinnar state	368(42.7%)	212(24.6%)	282(32.7%)	862(25.9%)
Northern state	336(39.4%)	214(25.1%)	303(35.5%)	853(25.6%)
River Nile state	295(34.8%)	231(27.3%)	321(37.9%)	847(25.5%)
Total	1332(40%)	881(26.5%)	1115(33.5%)	3328(100%)

Table (3). Relation between Knowledge about HIV/AIDS and education

Education	Knowledge			Total
	Good	Moderate	Poor	
Illiterates	254(42.4%)	112(18.7%)	233(38.9%)	599(18%)
Basic /Secondary	1576(76.7%)	283(13.8%)	196(9.5%)	2055(62%)
University/Postgraduate	614(92.6%)	39(5.9%)	10(1.5%)	663(20%)
Total	2444(73.6%)	434(13.3%)	439(13.1%)	3317(100%)

Chi square=543.935, P=0.000 (Significant)

students and is above (92.6%) followed by basic and secondary schools students (76.7%). Illiterates acquired the least level of knowledge (42.4%), (Table 3).

Tolerance of population towards PLWHA increased according to the level of education. The university graduated was more tolerant (55.1%) than the basic/secondary schools students (40.5%) and the illiterates (21.9).

The working population had better knowledge than those who were not working (78% versus 70.2%).

The attitude of the population in the selected states towards HIV/AIDS was better among the working population than those who were not working (40.4% versus 39.7%).

The level of knowledge as regards HIV/AIDS were higher among the single population (77.9%) followed by the divorced (74.3%), the married (72%) and the widowed (56.5%).

## Discussion

The study highlighted the relation of social factors of the population with the knowledge and attitude of HIV/AIDS. Knowledge of the population in the selected four states about HIV/AIDS was favorable. Good, average and poor knowledge constituted 73%, 13.2% and 13.2% respectively. These findings are higher than reports from Islamic Republic of Iran,

Sudanese immigrants in Denmark and students in India where the level of knowledge was 49.2%, 70% and 66%<sup>5-7</sup>.

Results showed that the highest knowledge about HIV/AIDS was in River Nile state (76.4%), followed by Gezira, the Northern and Sinnar states constituting 76.1, 71.3% and 71% respectively. The relation between the areas and level of knowledge is significant (Chi square= 32.052, P= 0.000). These results are not consistent with a study conducted in China where population from different areas had the same HIV/AIDS knowledge<sup>8</sup>.

The study showed that males acquired better knowledge than females (76.2% versus 71.8%). Poor knowledge among females and males was (15.6% and 9.7%). Females in rural areas may have less chance than males in accessing knowledge. The study shows a significant relation (Chi square= 24.434, P=0.000) between HIV/AIDS knowledge and gender.

Results showed that the level of knowledge increased according to the level of education. Level of HIV/AIDS knowledge was higher among university graduates (92.6%) followed by basic and secondary (76.7%) school students. Illiterates acquired the least level of knowledge (42.4%). The study shows significant relation (Chi square=543.935,

P= 0.000) between education and level of knowledge as regards HIV/AIDS.

According to this study, it was shown that working population had a better knowledge than those who were not working and the relation between HIV/AIDS knowledge and occupation (Chi square=30.185, P=0.000) is significant. These findings are not in line with a study conducted in Bangladesh in which working women had less HIV/AIDS knowledge than their counterparts [9], more information about the types of work is needed to so as to stratify the knowledge of HIV/AIDS with type of works, to justify why this difference in knowledge on HIV/AIDS occurred between working women in the Sudan and Bangladesh.

The results showed that the single population had better knowledge than the married, the widowed and the divorced and the relation is significant (Chi square=54.638, P=0.000). These findings are not consistent with reports from China<sup>10</sup>. Single population in Sudan may have better awareness on HIV/Aids, than in China.

The study indicated that attitude of the population towards HIV/AIDS was not satisfactory. Those respondents who had more tolerant and neutral attitude constituted 40%, those who had neutral and less tolerant attitude towards HIV-infected people constituted (26.5% and 33.5%) respectively. These results could be attributed to the difference in knowledge between the countries. This study found a significant relation between attitudes towards HIV/AIDS and education level, people with lower level of knowledge had more negative attitudes towards HIV-infected individuals.

Population of Gezira had more positive attitude towards PLWHA than the other states. Results showed a statistical relation between tolerance to HIV/AIDS and the area of residence (Chi square= 28.721, P=0.000).

The study revealed that females were more tolerant towards HIV/AIDS than males (42% versus 37.4%) and the relation between gender and attitude towards HIV/AIDS is significant (Chi square= 7.168, P= 0.028). These

findings are no in agreement with a study done in Saudi Arabia in which no relation was seen between attitudes towards HIV/AIDS and gender<sup>11</sup>.

The attitude of the population in the selected states toward HIV/AIDS was better among the working population than those who were not working and the relation between occupation and attitude towards HIV/AIDS is not significant (Chi-Square = 0.736, P=0.692). These findings are not in line with a study conducted in Mashhad, Islamic Republic of Iran<sup>5</sup>. The single population were more tolerant towards PLWHA; the study showed that here is a significant relation between (Chi-Square = 21.728, P= 0.001) marital status and attitude towards HIV/AIDS.

## Conclusion

The study concluded that Knowledge of the population in the selected states about HIV/AIDS was good, and the level of knowledge about HIV/AIDS among males and the working population was higher than the females and those without jobs. On the other hand the single population had better knowledge followed by the married, the widowed and the divorced.

Level of HIV/AIDS knowledge and tolerance of population towards PLWHA increased with the level of education. The working population had better knowledge than those who were not working. The attitude of the population in the selected states towards people living with HIV/AIDS "PLWHA" was low.

Females and the working population were more tolerant towards HIV/AIDS than males and the nonworking population, while single population was more tolerant towards PLWHA, followed by the married, the divorced and the widowed.

Efforts to improve attitude towards PLWHA is recommended and knowledge about HIV/AIDS are mandatory.

**Referances:**

1. Sara Lake and Graham Wood (2005). Combating HIV/AIDS in eastern Sudan: The case of preventive action. Ockenden International UK.
2. The national strategic plan for the prevention and control of HIV/AIDS in the Sudan, 2003 – 2007.
3. Maureen Engelbrecht, Prisma, A survey on HIV/AIDS in Sudan, July 2007.
4. M.R. Hedayati – Moghaddam. Knowledge of and attitudes towards HIV/AIDS in Mashhad, Islamic Republic of Iran. East Mediterranean Health Journal 2008 ;14(6):1321-32.
5. Lazarus JV, Himedan HM, Stergaard LR et al. knowledge and condom use among Somali and Sudanese immigrants in Denmark. Scan J Public Health 2006; 34(1): 92-9.
6. Shah M, Ambalam S. International Conference on AIDS (15th : 2004 : Bangkok, Thailand). Knowledge of HIV/AIDS prevention and transmission among tenth and twelfth grade students in Delhi, India. Int Conf AIDS. 2004; 15: abstract No. C12660.
7. Xiaoming Li, Chongde Lin, Zuxin Gao et al. Knowledge and the implications for health promotion programs among Chinese college students: geographic, gender and age differences. Health Promotion International; 19(3): 345-356.
8. Al-Serouri AW, Takioldin1 M, Oshish H.et al. Knowledge, attitudes and beliefs about HIV/AIDS in Sana'a, Yemen. Eastern Mediterranean health journal, 2002, 8(6):706–15.
9. Rahman M. M. Determinants of Knowledge and Awareness About AIDS: Urban -Rural Differentials In Bangladesh.. Journal of Public Health and Epidemiology 2009;1(1):007–013.
10. Chen J, Shengli C and Choe Mi K. Who has correct information and knowledge about HIV/AIDS in China? Asia-Pacific Population Journal. 2003: 18(4), 25-38.
11. Saad A. Al-Ghanim. 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.