

# Knowledge, attitude and practices of Egyptian industrial and tourist workers towards HIV/AIDS

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المعارف والمواقف والممارسات حول الإيدز والعدوى بفيروسه لدى العاملين المصريين في الصناعة والسياحة

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**الخلاصة:** استقصى الباحثون في هذه الدراسة المعارف والمواقف والممارسات حول العدوى بالإيدز لدى 1256 من العاملين المصريين في الصناعة والسياحة، ممن تتراوح أعمارهم بين 16 و40 عاماً. وقد كان لدى العاملين في السياحة إدراك أفضل بدرجة يُعتدُّ بها إحصائياً مما هو لدى العاملين في الصناعة حول مدى مشكلة الإيدز والعدوى بفيروسه في جميع أنحاء العالم وفي مصر، وحول احتمال تفاقم المشكلة، وحول العامل المسبب للمرض في الإيدز، وحول طُرُق سرايته. كما كان لدى كلا الفريقين مواقف سلبية تجاه المرضى الذين يعايشون الإيدز والعدوى بفيروسه، تتعلق بحقوقهم في التكتُّم وفي العمل، مع مواقف إيجابية تجاه التغيُّر السلوكي الإيجابي للوقاية من الإيدز والعدوى بفيروسه، وبشكلٍ رئيسي من خلال تجنُّب العلاقات الجنسية خارج إطار الزواج الشرعي والالتزام بالمعتقدات الدينية. ولم يبلغ عن استخدام العازل الذكري للوقاية من الإيدز والعدوى بفيروسه إلا 0.4% من العاملين.

**ABSTRACT** This study explored knowledge, attitudes and practices towards HIV/AIDS infection among 1256 Egyptian industrial and tourism workers aged 16–40 years. Compared with industrial workers, tourism workers had a significantly better perception of the magnitude of the HIV/AIDS problem worldwide as well as in Egypt and of the likelihood of the problem worsening. Knowledge of tourism workers was also significantly better about causative agent of AIDS and methods of transmission. Both groups had negative attitudes towards patients living with HIV/AIDS concerning their right to confidentiality and to work. Both groups had a positive attitude towards behaviour change for protection from HIV/AIDS, principally via avoidance of extramarital sexual relations and adherence to religious beliefs. Use of condoms as a way to avoid HIV/AIDS was reported by only 0.4% of workers.

## Connaissances, attitudes et pratiques des travailleurs des secteurs industriel et touristique égyptiens vis-à-vis du VIH/sida

**RÉSUMÉ** Cette étude a étudié les connaissances, les attitudes et les pratiques vis-à-vis de l'infection à VIH/sida chez 1256 travailleurs des secteurs industriel et touristique âgés de 16 à 40 ans. Comparés aux travailleurs du secteur industriel, les travailleurs du secteur touristique avaient une perception significativement meilleure de l'ampleur du problème du VIH/sida, dans le monde comme en Égypte, et du risque d'aggravation de ce problème. Ils avaient aussi des connaissances significativement meilleures concernant l'agent étiologique du sida et ses modes de transmission. Les deux groupes avaient des attitudes négatives vis-à-vis des personnes vivant avec le VIH/sida en ce qui concerne leur droit à la vie privée et au travail. Les deux groupes avaient une attitude positive vis-à-vis d'un changement de comportement pour se protéger contre le VIH/sida, principalement en évitant les rapports sexuels extraconjugaux et en respectant les croyances religieuses. Seuls 0,4 % des travailleurs déclaraient utiliser un préservatif pour éviter l'infection à VIH et le sida.

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## Introduction

It is well known that acquired immunodeficiency syndrome (AIDS) is a devastating disease at the individual and national level [1]. In the 20 years since the first cases of AIDS were reported there have been almost 22 million AIDS-related deaths and an estimated 40 million people were living with the human immunodeficiency virus (HIV) around the world [2].

Among the factors that have contributed to the spread of HIV/AIDS, ignorance and denial, and increase in mobility and industrialization have been critical. The growth of the global economy and international trade and travel have facilitated the rapid spread of the disease and have had a financial and social impact on business [3].

Increased turnover in staff due to AIDS mortality is only one example of the impact of AIDS on the workforce. In addition, as AIDS is a protracted illness, sick workers are likely to become less productive and take more time off work. Furthermore, if a family member of a worker falls ill, work hours may also be lost to meet care needs. Medical bills, if paid for by companies, will also increase [4].

Even in countries where the prevalence of HIV is low, such as Egypt, early action is essential to avoid serious impact on economic activity and future markets. Such response includes actions to protect the workforce, community outreach activities and philanthropy [3,5].

The aim of this study was to explore the knowledge, attitudes and practices of industrial and tourist workers in Egypt towards HIV/AIDS infection.

## Methods

The target population comprised 2 groups: industrial workers in the textile industry in

3 large industrial cities in Egypt (Mahalla El-Koubra, 10th of Ramadan and Kafr El-Dawar); and tourism workers in 3 main tourist locations in Egypt (Luxor city, South Sinai tourist resorts and Red Sea tourist resorts).

A list of factories and tourist establishments located in the selected towns and the total number of workers in each location were obtained. A sample of 3 factories and 3 tourist establishments were randomly selected from places accommodating more than 100 workers. Workers in these areas were divided into small clusters according to the circumstances of each place. A number of clusters were randomly chosen from each place to represent 10%–20% of the total population of that place.

A predesigned questionnaire sheet was used for data collection. The validity of the questionnaire was established by peer and expert review of the contents. The questionnaire was pretested in a pilot study including workers of similar characteristics from places not included in the study representing industrial and tourist workers. Test–retest reliability was also performed and the correlation was  $> 0.7$  by Spearman rank correlation.

The questionnaire sheet included 32 questions covering the following data:

- Sociodemographic data, including age, sex, marital status, educational level, occupation and residence.
- Knowledge about the epidemiological aspects of HIV/AIDS, including the magnitude of the problem worldwide and in Egypt (low, moderate or high prevalence of HIV), methods of transmission of infection, clinical manifestations and knowledge about treatment of patients.
- Attitudes and practices towards HIV/AIDS and behaviour changes that could

take place in response to HIV/AIDS risk of infection. These were actual practices or intention to practice or change their practices in the future to avoid HIV infection.

The questions used were all closed ended. For questions related to knowledge they were multiple choice. For attitude questions, the answers were agree/disagree. For questions related to practice the answers were yes/no.

Before distributing the questionnaire sheet, the managers of the textile factories, hotels and tourist villages included in the study were interviewed by the research team to explain the objectives of the study and the activities that would be done. The questionnaire sheets were then distributed to workers aged 16–40 years working in the selected places. The research team went through the questions in the sheet with the workers to make sure that they had a comprehensive understanding of the questionnaire and explained any questions they had misunderstood. Workers were asked to fill in the questionnaire anonymously. Illiterate workers were helped by the interviewers to fill in the questionnaire. The proportion of properly filled questionnaires was  $\geq 90\%$  at the different study sites.

The collected data were organized, tabulated and statistically analysed using the chi-squared test. The 5% level of significance was adopted.

## Results

A total of 1256 workers were studied: 624 (49.7%) industrial workers and 632 (50.3%) tourism workers. The age distribution of the 2 groups was significantly different ( $\chi^2 = 252.89$ ,  $P < 0.001$ ). Among industrial workers, those aged  $< 22$  years represented 35.8% as compared to 9.6% among tourism workers. The majority of tourism workers

(61.2%) were aged 26–30 years as compared to 29.8% among industrial workers. Workers aged 31–40 years represented 13.0% among industrial workers as compared to only 0.8% among tourism workers. The sex distribution was also significantly different in the 2 groups; females represented 36.2% of industrial workers as compared to 4.4% among tourism workers ( $\chi^2 = 196.65$ ,  $P < 0.001$ ) (Table 1).

The majority of workers were unmarried (60.4%), with a significant difference between the 2 groups in the distribution of workers in relation to marital status ( $\chi^2 = 3.60$ ,  $P = 0.058$ ). Illiteracy was higher among industrial workers (14.9%) compared to tourism workers (1.7%) and the percentage of those with higher education was 28.3% among tourism workers compared to only 5.1% of industrial workers ( $\chi^2 = 235.32$ ,  $P < 0.001$ ). The majority of industrial workers were manual workers (71.2%) while nearly one-half of tourism workers were employees (50.3%) ( $\chi^2 = 238.03$ ,  $P < 0.001$ ). The majority of industrial workers lived with their families (94.3%) while the majority of tourism workers lived away from their families with friends (65.5%) ( $\chi^2 = 512.97$ ,  $P < 0.001$ ) (Table 1).

Concerning knowledge about the magnitude of the problem of HIV/AIDS, significantly more tourism workers than industrial workers reported AIDS as the most serious disease worldwide (86.6% versus 79.7%) ( $\chi^2 = 10.66$ ,  $P < 0.001$ ) (Table 2). Similar proportions of workers of both groups reported AIDS as the most serious problem in Egypt (32.4% for industrial and 36.1% for tourism workers). Perception of the importance of liver diseases as a serious problem was significantly higher among tourism workers (33.2%) compared to industrial workers (23.6%) ( $\chi^2 = 14.43$ ,  $P < 0.001$ ). Again, a significantly higher percentage of industrial workers could not say which disease was

Table 1 Characteristics of the study sample

Variable	Industrial workers (n = 624)		Tourism workers (n = 632)		Total (n = 1256)		$\chi^2$	P-value
	No.	%	No.	%	No.	%		
<i>Age (years)</i>								
< 18	79	12.7	2	0.3	81	6.5	252.89	< 0.001
18–21	144	23.1	59	9.3	203	16.2		
22–25	134	21.5	179	28.3	313	24.9		
26–30	186	29.8	387	61.2	573	45.6		
> 30	81	13.0	5	0.8	86	6.9		
<i>Sex</i>								
Male	398	63.8	604	95.6	1002	79.8	196.65	< 0.001
Female	226	36.2	28	4.4	254	20.2		
<i>Marital status</i>								
Married	229	36.7	265	41.9	494	39.3	3.60 <sup>a</sup>	0.058
Single	393	63.0	366	57.9	759	60.4		
Divorced	2	0.3	1	0.2	3	0.2		
<i>Education level</i>								
Illiterate	93	14.9	11	1.7	104	8.3	235.32	< 0.001
Primary	202	32.4	73	11.6	275	21.9		
Secondary	297	47.6	369	58.4	666	53.0		
High	32	5.1	179	28.3	211	16.8		
<i>Occupation</i>								
Manual worker	444	71.2	202	32.0	646	51.4	238.03	< 0.001
Technician	103	16.5	112	17.7	215	17.1		
Employee	77	12.3	318	50.3	395	31.5		
<i>Residence</i>								
With family	588	94.3	206	32.6	794	63.2	512.97 <sup>b</sup>	< 0.001
Alone	13	2.1	12	1.9	25	2.0		
With friends	23	3.7	414	65.5	437	34.8		

<sup>a</sup>Married versus other groups.

<sup>b</sup>Residence with family versus other groups.

n = total number of participants.

the most serious in Egypt (4.9% compared to 0.6% for tourism workers). Knowing the magnitude of the problem of HIV/AIDS and its likelihood to get worse in the future was significantly better among tourism workers compared to industrial workers ( $\chi^2 = 16.81$  and  $6.71$  respectively,  $P < 0.01$ ). Among tourism workers, 69.2% knew the magnitude of the problem of HIV/AIDS in Egypt and 60.6% reported it was likely to get worse in the future compared to 58.0%

and 53.4% respectively among industrial workers

Knowledge about AIDS, its causative agent and methods of transmission was significantly better among tourism workers than industrial workers, except for knowledge about transmission at barbershops and dentist clinics, which were reported by similar percentages of workers of both groups (Table 3). The wide difference in knowledge was especially noticeable for

Table 2 Knowledge of Egyptian workers about the magnitude of HIV/AIDS

Knowledge items	Industrial workers (n = 624)		Tourism workers (n = 632)		Total (n = 1256)		$\chi^2_1$	P-value
	No.	%	No.	%	No.	%		
<i>Most serious disease worldwide</i>								
AIDS	497	79.7	547	86.6	1044	83.1	10.66	< 0.001
Cancer	35	5.6	35	5.5	70	5.6	–	–
Liver diseases	28	4.5	30	4.8	58	4.6	0.05	0.82
Renal diseases	12	1.9	10	1.6	22	1.8	0.21	0.645
Other diseases	26	4.2	8	1.3	34	2.7	10.03	0.002
Don't know	26	4.2	2	0.3	28	2.2	21.36	< 0.001
<i>Most serious disease in Egypt</i>								
AIDS	202	32.4	228	36.1	430	34.2	1.91	0.167
Liver diseases	147	23.6	210	33.2	357	28.4	14.43	< 0.001
Cancer	74	11.9	67	11.2	141	11.2	0.50	0.480
Renal diseases	71	11.4	71	10.6	142	11.3	0.01	0.936
Bilharziasis	39	6.3	30	4.8	69	5.5	1.32	0.242
Other diseases	60	9.6	22	3.5	82	6.5	19.36	< 0.001
Don't know	31	4.9	4	0.6	35	2.8	21.78	< 0.001
<i>Know magnitude of the problem of HIV/AIDS in Egypt</i>								
	362	58.0	437	69.2	799	63.6	16.81	< 0.001
<i>Likelihood of HIV/AIDS problem getting worse in the future</i>								
	333	53.4	383	60.6	716	57.0	6.71	0.010

n = total number of participants.

knowledge concerning the causative agent for AIDS and the presence of healthy carriers for HIV. The causative agent of AIDS was correctly reported by 66.5% of tourism workers and only 21.8% of industrial workers, and knowledge about the presence of healthy carriers for HIV was reported by 72.3% of tourism workers compared to 45.0% of industrial workers. On the other hand, misconceptions about methods of HIV transmission were all significantly higher among industrial workers compared to tourism workers ( $P < 0.001$ ) (Table 4).

Both groups of workers had negative attitudes concerning HIV/AIDS patients, in terms of their right to confidentiality and right to work and in terms of their acceptance of working with people with HIV/AIDS (approved by only 23.2% of

industrial and 26.0% of tourism workers) (Table 5). Another negative attitude was towards disclosure of HIV/AIDS patients' names to the public, reported by 54.5% of industrial workers but 46.4% of tourism workers. A significantly higher percentage of tourism workers (94.8%) had a positive attitude towards changing behaviour to ensure protection against HIV/AIDS as compared to industrial workers (85.3%) ( $P < 0.001$ ) (Table 5).

Table 6 shows the results of workers practices towards behavioural changes that should be adopted to prevent infection with HIV. Significantly more tourism workers reported the need to avoid extramarital sexual relations (59.3%) and adhere to religious beliefs (33.2%) compared to 45.2% and 21.4% respectively among industrial

**Table 3 Knowledge of Egyptian workers about causative agent, methods of transmission and prevention of HIV/AIDS**

Knowledge items	Industrial workers (n = 624)		Tourism workers (n = 632)		Total (n = 1256)		$\chi^2$	P-value
	No.	%	No.	%	No.	%		
Heard about AIDS	587	94.1	627	99.2	1214	96.7	25.65	< 0.001
Know causative agent for AIDS	136	21.8	420	66.5	556	44.3	253.85	< 0.001
Presence of healthy carriers for HIV	281	45.0	457	72.3	738	58.8	94.41	< 0.001
Transmission of HIV infection from healthy carriers	524	84.0	556	87.8	1080	86.0	4.17	0.041
Know methods of transmission of infection	512	82.1	606	95.9	1118	89.0	61.45	< 0.001
Transmission of HIV infection by use of common syringes	595	95.4	616	97.5	1211	96.4	4.07	0.044
Transmission of HIV infection by multiple sexual partners	575	92.2	615	97.3	1190	94.8	16.81	< 0.001
HIV can be prevented	543	87.0	608	96.2	1151	91.6	34.56	< 0.001
Transmission of HIV infection at barber shops	432	69.2	436	69.0	868	69.1	0.01	0.926
Transmission of HIV infection at dentist clinic	426	68.3	453	71.7	879	70.0	1.74	0.188

n = total number of participants.

**Table 4 Misconceptions of Egyptian workers about HIV/AIDS**

Knowledge items	Industrial workers (n = 624)		Tourism workers (n = 632)		Total (n = 1256)		$\chi^2$	P-value
	No.	%	No.	%	No.	%		
Transmission of HIV infection by insects	276	44.2	220	34.8	496	39.5	11.66	P < 0.001
Transmission of HIV infection by shaking hands or casual contact	188	30.1	60	9.5	248	19.8	84.37	P < 0.001
Transmission of HIV infection by kissing	269	43.1	148	23.4	417	33.2	54.90	P < 0.001
Transmission of HIV infection by eating or drinking with patients	287	46.0	120	19.0	407	32.4	104.55	P < 0.001
Transmission of HIV infection by use of common toilet	240	38.5	136	21.5	376	29.9	42.97	P < 0.001
Transmission of HIV infection by use of patient's clothes	272	43.6	115	18.2	387	30.8	94.97	P < 0.001

n = total number of participants.

workers. Only 2.8% and 1.4% of both groups reported avoidance of illicit drugs and limiting the number of sexual partners respectively. Use of condoms was reported by 0.2% of industrial workers and 0.6% of tourism workers (Table 6).

## Discussion

Concerns that HIV would continue to strengthen its presence in the Eastern Mediterranean Region are borne out by the latest estimates that show that 92 000 people became infected with HIV in 2004 [6].

In the present study, basic knowledge about the seriousness of the problem of AIDS worldwide was good. Knowledge about the magnitude of the problem, causative agent and methods of transmission of HIV/AIDS was significantly better among tourism workers compared to industrial workers. Differences in education may explain these differences.

In the present study, misconceptions concerning methods of transmission of HIV were significantly higher among industrial workers, as around 30%–46% of them still believed that HIV can be transmitted by casual contact. More than one-third of both

groups reported the possibility of infection by insects. In a similar study in India, respondents felt that HIV transmission via everyday contact at work was a general workplace anxiety. Group discussions in workplaces mentioned the following as perceived possible transmission routes: sharing utensils in the canteen, drinking water from the same glass, sitting in close proximity while operating machinery or having infected people as group members. Anxieties such as these have led some HIV-positive workers to quit their jobs rather than risk the humiliation of being removed by employers or colleagues. The physical distance maintained by coworkers at meal times or general working hours was reported to be particularly stigmatizing [7]. These false ideas reflected negatively on the attitude of both groups towards HIV/AIDS patients.

Confidentiality of medical information has been considered a central element of the rights of patients in many nations [8]. This principle of ethical and human rights recognizes that all people have the right to privacy about personal medical conditions. It applies fully to HIV infection and AIDS. In an employment setting it means that a person infected with HIV should have full

Table 5 Attitude of Egyptian workers towards HIV/AIDS patients

Attitude item	Industrial workers (n = 624)		Tourism workers (n = 632)		Total (n = 1256)		$\chi^2_1$	P-value
	No.	%	No.	%	No.	%		
Accept patient's right for confidentiality	136	21.8	124	19.6	260	20.7	0.90	0.342
Agree with disclosure of patient's name to the public	340	54.5	293	46.4	633	50.4	8.29	0.004
Accept patient's right to work	167	26.8	172	27.2	339	27.0	0.03	0.857
Accept working with HIV/AIDS patients	145	23.2	164	26.0	309	24.6	1.25	0.264
In favour of behaviour changes for protection from HIV/AIDS infection	532	85.3	599	94.8	1131	90.1	31.77	< 0.001

n = total number of participants.

**Table 6 Changes in behaviours reported by Egyptian workers to prevent infection with HIV/AIDS**

Behaviour change item	Industrial workers (n = 624)		Tourism workers (n = 632)		Total (n = 1256)		$\chi^2_{11}$	P-value
	No.	%	No.	%	No.	%		
Avoid extramarital sexual relations	282	45.2	375	59.3	657	52.3	25.18	< 0.001
Adhere to religious beliefs	152	24.2	210	33.2	362	28.8	12.04	< 0.001
Avoid illicit drugs	20	3.2	15	2.4	35	2.8	0.80	0.371
Limit number of sexual partners	13	2.1	5	0.8	18	1.4	3.71	0.054
Get married	5	0.8	2	0.3	7	0.6	FE	0.285
Use condoms	1	0.2	4	0.6	5	0.4	FE	0.374

FE = Fisher exact test.

n = total number of participants.

control over decisions about who, how, and even if, his or her colleagues are informed [9]. In the present study only 20.7% of the study sample accepted patients' rights to confidentiality and 50.4% approved of disclosure of patients' names.

Patients' right to work was approved by only 27.0% of studied workers and only about one-quarter (24.6%) of workers in the present study accepted working with a patient suffering from HIV/AIDS. This negative attitude is partly due to misconceptions about the disease. Respect for human rights is critical to the prevention and successful management of HIV/AIDS. Significant HIV/AIDS-related human rights issues are crucial for prevention and control and include the advancement of the right to health, the right to education, the right to privacy, the right to equality and non-discrimination and the right to information and education [2].

While HIV is not readily transmitted in the majority of workplace settings, the supposed risk of transmission has been used by numerous employers to terminate or refuse employment [10–14]. There is also evidence

that where people living with HIV/AIDS are open about their seropositive status at work they are likely to experience stigmatization and ostracism by others [15,16]. In India, anecdotal evidence of employment-related discrimination and stigmatization has begun to emerge. Individual cases of job loss, emotional isolation and denial of employment on the basis of HIV status have been reported in the media [7].

The most common behaviour change reported by the study workers in order to combat the spread of HIV/AIDS was avoiding extramarital sexual relations, reported by 59.3% of tourism workers and 45.2% of industrial workers. This behaviour change is an accepted part of social and religious norms of Egyptian society, which discourage extramarital sexual relations. A significantly higher proportion of tourism workers supported this behaviour change, perhaps because they have more opportunities for extramarital sexual relations with foreign tourists [17].

Avoidance of illicit drugs (2.8%) and limiting the number of sexual contacts (1.4%) were not reported as methods of

behaviour change except by a few workers. This may be due to the absence of these risky behaviours among the study workers, who therefore do not feel in need of these measures, or because they lack information about the importance of these risky behaviours for HIV transmission. Again, use of condoms as a protective measure was not reported as a behaviour change measure for protection against HIV/AIDS except by 5 (0.4%) workers. It is not clear whether this negative response was due to lack of knowledge about the protective value of condoms or dislike of using them.

## Recommendations

Egyptian industrial and tourism workers constitute a large sector of sexually active adults that should be addressed by health education programmes for HIV/AIDS prevention. Such programmes should stress information dissemination and correction of misconceptions about HIV/AIDS among workers to motivate them to adopt preventive and protective measures and prevent the discrimination and stigmatization associated with HIV/AIDS.

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### ***Towards universal access: scaling up priority HIV/AIDS interventions in the health sector***

*Towards universal access: scaling up priority HIV/aids interventions in the health sector*, a collaboration between WHO, UNAIDS and UNICEF, is the definitive yearly chronicle of the health sector response to HIV prevention, treatment and care. The key messages of the report are:

- The combined efforts of countries and international partners have resulted in substantial, ongoing progress towards providing HIV interventions in low- and middle-income countries.
- By the end of 2007, nearly 1 million more people were receiving antiretroviral therapy (ART), bringing the total number of recipients to almost 3 million. This represents a more than seven-fold increase over the past 4 years.
- Despite these unprecedented gains, global coverage of ART remains low: only 31% of people in need of ART received it by the end of 2007. That same year, an estimated 2.5 million people were newly infected with HIV and 2.1 million died of AIDS.

Further information about this and other WHO publications is available at: <http://www.who.int/publications/en/>