

# Impact of educational package on sexual health knowledge among healthcare workers in Lebanon

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## Abstract

Rationale, aims and objectives: In Lebanon, HIV is concentrated among men who have sex with men (MSM). Healthcare workers in testing centers are trained through workshops to gain HIV and sexually transmitted infections (STIs) information and skills. The objective of this report is to evaluate this intervention. Methods: Nine workshops were conducted in 2018. Each workshop was introduced and concluded with a pre and post intervention questionnaire that addressed HIV knowledge, health-risk behaviours, STIs testing. Results: A total of 144 participants were included. HIV knowledge score increased by 37.5% ( $p < 0.05$ ) after the interventions. The areas with the lowest knowledge after the training were the questions about non-sexual HIV transmission, the fluids containing HIV, prevention and treatment of HIV. STIs knowledge score showed a 29.7% increase ( $p < 0.05$ ). Stigma score showed an increase by 11.7% ( $p > 0.05$ ). In all scores, there were differences between urban and rural areas. Conclusion: These findings consolidate the value of these training sessions and highlights the importance of the use of innovative learning approaches. Further efforts and interventions should address stigma and discrimination among service providers to reach better outcomes in Lebanon. A comparison with some of the indicators that exist in previous reports show higher knowledge in healthcare workers compared to MSM community that is served by these healthcare workers. These activities among health care workers are crucial to increase HIV knowledge and reduce high-risk behaviors among key populations.

## Impact of educational package on sexual health knowledge among healthcare workers in Lebanon

### Introduction

In Lebanon, HIV is concentrated among men who have sex with men (MSM)<sup>1</sup>. In the general population, prevalence has remained low ( $< 0.1\%$ ). By comparison, prevalence among MSM is estimated to be 12% and this vulnerable group has become a priority for HIV prevention and treatment in the last few years<sup>1,2</sup>.

Lebanon made successful commitments in achieving the 90-90-90 global HIV targets by 2020 in line with the 3<sup>rd</sup> Sustainable Development Goal: 90% of the population knowing their HIV status, 90% on sustained anti-retroviral therapy (ART) and 90% with suppressed viral load<sup>3</sup>. In 2019, a test, treat, retain cascade (TTRC) showed that 94.7% of people living with HIV (PLHIV) know their status, 64.5% are retained in ART and 59.3% are virally suppressed<sup>4</sup>. These rates are in contrast with the majority of the countries of the Eastern Mediterranean Region (EMR) where 34% of PLHIV know their status, 18% are retained in ART and 15% are virally suppressed<sup>5</sup>.

Several internationally recognized best practices have been adopted in Lebanon including voluntary HIV testing, implementing harm reductions measures for high-risk populations and training healthcare workers to expand community-based HIV prevention measures focused on increasing HIV knowledge and reducing high-risk behaviors among key populations. Voluntary testing can be done at laboratories, private and public

hospitals, or voluntary and confidential testing (VCT) centers. The VCT free service provides informative brochures about sexually transmitted infections (STIs) such as HIV/AIDS including how to test for HIV, seek counselling throughout the testing process, and refer to health care and social services. These services target key populations, youth, premarital couples, and blood donors.

According to the National AIDS Program (NAP), 70 VCT centers are currently providing HIV related services. Healthcare workers, peer educators, outreach workers and volunteers in these VCT centers and in other centers (socio-medical centres, primary health care (PHC) centres,...) are trained by the NAP through workshops that aim to provide HIV prevention information, skills and supplies (information, education and communication materials, condoms,...) as well as links to HIV testing, treatment and other services, based on globally recommended best practices for HIV prevention implemented by the World Health Organization (WHO).

Globally, sexual education programs targeting youth in schools, clinics, or community settings are effective interventions to reduce sexual risk taking<sup>6,7</sup>. A review of 83 experimental and quasi-experimental studies assessing programs using 6 aspects of sexual behavior as criteria concluded that such programs were far more likely to have positive rather than negative impact on behavior<sup>6</sup>. Education programs successfully delayed initiation of sex in 42% of studies, reduced the frequency of sex in 29% of studies, decreased the number of sexual partners in 35% of studies, increased condom use in 48% of studies, increased contraceptive use in 40% of studies, reduced sexual risk taking in 50% of studies, and had significant positive impacts on pregnancy rates and STI rates. For all these criteria of sexual behavior, the remaining studies found no significant impact of the intervention rather than a negative impact. These programs are thought to contribute to behavioral change by influencing psychosocial mediating factors such as knowledge, perceived risk, values and attitudes, perception of peer norms, self-efficacy, and others<sup>7</sup>. Most programs significantly increased knowledge including methods of prevention for HIV, STIs, and pregnancy. Only half of the eligible studies significantly increased perceived risk, while more than 60% of studies were effective in improving the measured values and attitudes. Perceptions about peer sexual behavior were significantly improved in 40% of the 29 eligible studies<sup>7</sup>. The majority of programs had a positive impact on parent communication, intention to abstain or restrict sex, and intention to increase condom use.

Sexual education is absent in the official curriculum of schools and universities and relies mainly on initiatives from community centres staff who are trained by the NAP. In 2018, the NAP in Lebanon developed a series of training material targeting health care professionals and social workers involved in the delivery of life-saving sexual health services. Constraints to verbalize sexual experiences and professionals' reluctance to discuss sexual issues with patients are some of the major recorded barriers for the successful delivery of these services<sup>8</sup>. Therefore, there is a clear need to strengthen knowledge of professionals but also bridge the communication gap with beneficiaries.

The main objective of this report is to evaluate this intervention among healthcare workers who are in touch with the different communities. The specific objectives were to compare pre-intervention and post-intervention knowledge about HIV, STIs and stigma and discrimination towards PLHIV.

## Material and methods

### *The intervention*

The workshops delivered by the NAP consisted of a 2-day training on HIV scientific and epidemiological facts, STIs scientific and epidemiological facts, updated VCT essentials, HIV self-testing and partner notification. In addition to the scientific part, different diagnostic tests hands-on were delivered. For these workshops, pre and post-questionnaires were collected to evaluate the intervention and its impact on participants knowledge and beliefs.

These workshops were delivered between May and November 2018. During this period, the NAP organized 7 workshops attended by 117 participants in the capital Beirut, and 2 workshops attended by 27 participants in rural Beqaa.

### *Participants*

In Lebanon, 70 VCT centers and other agencies that work on the ground with general and key populations in the field of HIV and STIs operate mainly in the capital, Beirut, with outreach activities outside Beirut. As mentioned above, a total of 144 healthcare workers, peer educators, outreach workers and volunteers in these centers with clustered activities in Beirut and the Beqaa were invited by the NAP to these series of workshops.

### *Data collection and instrument*

Survey questions were drawn from instruments previously used in Lebanon that addressed HIV knowledge, health-risk behaviours, STIs testing. Knowledge queries covered HIV transmission, infectivity and prevention (23 true/false questions), STIs signs, awareness and prevention (17 true/false questions) and stigma/discrimination (4 true/false questions). Data was collected using Kobo Toolbox (GNU Affero General Public License v3.0).

### *Ethics*

All procedures performed in this study were in accordance with the relevant ethical standards of the institutional and national research committees and with the 1964 Helsinki declaration and with the WHO ethics standard<sup>9</sup>. Since this questionnaire did not attempt to extract intimate personal information and exclusively consisted of HIV/STIs knowledge, the study did not need an Institutional Review Board approval.

### *Quantitative data analysis*

Survey data were extracted on Microsoft Excel and then imported and analysed using STATA version 13 MP. Responses were summarized using frequencies and proportions as they were all categorical variables.

### *HIV knowledge score*

An HIV knowledge score consisting of 17 items was constructed. This score is based on the validated reduced HIV-KQ grouping items of transmission, infectivity, and general knowledge<sup>10</sup>. This continuous score was then dichotomized using 11 correct answers and above as a cut-off to indicate high knowledge and 10 correct answers and below indicating low knowledge.

### *STI knowledge score*

An STI knowledge score consisting of 17 items measuring STI signs, prevention, and general knowledge was constructed. This continuous score was then similarly dichotomized using 11 correct answers and above as a cut-off to indicate high knowledge and 10 correct answers and below indicating low knowledge.

### *Stigma and discrimination score*

A stigma and discrimination score consisting of 4 items measuring general knowledge and prevention was created. A cut-off of 3 correct answers and above was used to indicate high knowledge and 2 correct answers and below to indicate low knowledge.

Two tailed t-test was used to establish the statistical significance among pre and post-training score. To indicate statistical significance,  $p < 0.05$  was used.

## **Results**

A total number of 144 participants who attended 9 workshops conducted by the NAP during the period May-November 2018 and who had filled both pre and post-intervention questionnaires were included in this study.

### *Knowledge of HIV/AIDS*

At the pre-test, 41.2% had comprehensive knowledge on HIV. After the training, the HIV knowledge increased to 78.7% indicating that the trainings were successful in increasing HIV specific knowledge of the participants.

**Table 1** shows the 23 components of the comprehensive HIV knowledge indicator separately. The areas with the lowest knowledge after the training were the questions about non-sexual HIV transmission, the fluids containing HIV, prevention (condoms, pre and post-exposure prophylaxis) and treatment of HIV. The HIV knowledge score showed an overall 37.5% statistically significant increase (P-value<0.05) in high knowledge after the interventions (**Figure 1**). This increase was particularly striking among the Bekaa sample that had a baseline high knowledge of only 7.1% and a post-intervention high knowledge of 53.8% indicating a 46.7% increase in high knowledge among this subsample.

### *Knowledge of STIs*

Comprehensive STIs knowledge was 56.8% at pre-test and 86.5% at post-test, indicating a success in the training in this field. **Table 2** shows the details of the 17 indicators separately. The areas with the lowest knowledge after the training were the washing after sexual intercourses. The STI knowledge score showed a 29.7% overall statistically significant increase (P-value<0.05) in high STI knowledge after the intervention, with the impact most evident once again across the Beqaa (**Figure 2**). This subsample showed a staggering 59.6% increase in high STI knowledge after the intervention.

### *Stigma and discrimination towards PLHIV*

The overall score of the 4 items was 48.6% at pre-test and 60.3% at post-test (**Table 3**). Although with no statistical significance, the intervention had an overall increase on stigma knowledge score of only 11.7% (**Figure 3**). The Beqaa sample showed an unremarkable increase in high stigma knowledge to an already very poor baseline of 3.6% high stigma knowledge. On the other hand, the Beirut sample started at almost 60% high stigma knowledge, which rose to 72.2% after the intervention.

## **Discussion**

The current study provides insights about knowledge and attitudes of 144 healthcare workers, peer educators, outreach workers and volunteers working in HIV testing centers in Lebanon in regards to HIV and STIs.

Knowledge is a latent concept difficult to properly measure. Using individual questionnaire items to measure the effectiveness of the intervention would not only carry considerable imprecisions, but also make it difficult to accurately assess the overall magnitude and sometimes even the direction of this impact. The construction of scores using multiple items intended to capture the greatest amount of variability across the different knowledge scales while limiting the imprecision. Although the pre-intervention rates show a relatively large gap of knowledge and misconceptions regarding modes of transmission of the infection and preventions, the post-intervention rates were higher with statistical significance and confirm the efficacy of the intervention. Thus, the main objective of this report was achieved and the intervention among healthcare workers was successful.

That being said, there are some interesting additional observations to be noted from this study. Across both urban and rural samples, participants were more knowledgeable at baseline with STI facts than they were with particular HIV facts (56.8% vs 41.2%, respectively). Although both sets of information were acquired at different rates (knowledge rise: 29.7% STI vs 37.5% HIV), participants had higher overall post-intervention knowledge about STI than they did HIV (86.5% vs. 78.7%, respectively). This finding consolidates the value of these training sessions and highlights the importance of repetition and the use of innovative learning approaches, especially that the disease prognosis of HIV carries far more consequences than any other STI.

The results indicate that rural Beqaa participants absorbed a greater amount of information, meaning the intervention was therefore more impactful among this subsample. This was particularly true for HIV and STI knowledge where participant knowledge increased from poor to very significant rates. While this was also true for stigma knowledge when examining the overall sample, a closer look showed that Beqaa participants displayed a great resistance to this information. The authors postulate that this was not the result of a difficulty in assimilating information, rather a resistance to accept and translate this particular information into words in a setting strongly driven by cultural and religious beliefs. Some studies have provided evidence for a robust relationship between knowledge and level of acceptance<sup>11</sup> while others found no evidence of

direct relationships even when learning gains have been substantiated<sup>12</sup>. Further qualitative work should explore this particular distinction across the sexual health context.

HIV/AIDS-related stigma and discrimination among health care workers is one of the most important factors of HIV expansion. It discourages people from seeking care or being tested for HIV, thus reducing access to HIV/AIDS prevention. Further efforts and interventions should address this issue among service providers to reach higher scores.

Similar studies have been conducted in Lebanon but show old data. In 1993, a total of 350 nurses were interviewed to assess their knowledge, attitudes, beliefs and practices regarding HIV/AIDS<sup>13</sup>. Findings revealed that the majority of nurses were aware of modes of HIV transmission and 80% mentioned condom use as a protective measure. On the other hand, misconceptions were highly prevalent and negative attitudes towards MSM were expressed. Among the questioned nurses, only 46% were willing to care for an HIV patient and 50%

encouraged isolating patients with HIV in special wards. A second study conducted in 2005 among laboratory workers revealed that 49% of the assessed laboratories lacked the appropriate equipment to dispose of needles and other sharp objects<sup>14</sup>. No previous studies have assessed HIV and STIs knowledge in healthcare workers who deal on the ground with general and key populations.

Knowledge among the MSM and sex workers (SW) communities was studied in 2018<sup>2</sup>. These communities are served by the centers' staffs surveyed in this report. Thus, a comparison between the service providers and the service recipients might show some insights in lack of data settings. A comparison between some of the indicators that exist in the mentioned report and in the current report show higher knowledge in healthcare workers compared to the 2 communities that are served by these healthcare workers. These findings are shown in **Table 4**.

In the EMR, similar studies are rare. In Egypt, among 310 health care workers at Tanta University Hospital, high levels of stigma and discrimination against PLHIV were reported<sup>15</sup>. Only 24.0% had previous contact with PLHIV during work and 21.3% felt worried to touch cloths of HIV patients; 26.4% were worried to dress the wounds of patients living with HIV and 27.4% were afraid to get blood sample from HIV patients. Those unwilling to offer care for PLHIV represented 40%. Out of the participants, 78.7% reported that HIV patients should be ashamed of themselves; 48% and 43% preferred not to provide medical services to MSM and SW suspected to have HIV infection, respectively. Another report from Kingdom Saudi Arabia in 2014 included a total number of 90 health care workers, and showed a lack of knowledge among this population<sup>16</sup>. An older paper, from Morocco, reported that 266 healthcare workers were surveyed in 2002 and they showed a satisfactory knowledge about HIV but a high level of stigma toward PLHIV<sup>17</sup>.

Many factors limit our study. First, no demographic or behavioral variables (except the place of delivery of the workshop) were collected which would have given more insight into the possible predictors of knowledge. A redesign of the questionnaire might be taken into consideration for the future workshops. Second, the instrument used in this report is not validated which makes the comparison with other studies difficult. However, this is the case in the majority of knowledge studies as validated questionnaires are usually long and depend on each country's epidemic, socio-cultural factors, and programme's experience.

Third, the urban/rural dichotomy presented in this study is weak. In our current dynamics, participants are exposed to in-country travel and importation of modern ideas. However, rural contexts can show resistance to accept knowledge that threaten their original beliefs regardless of what they are exposed to. Fourth, not all participants filled both pre and post-intervention questionnaires, thereby introducing a certain amount of selection bias.

However, the current study provides insights about knowledge and attitudes of 144 healthcare workers, peer educators, outreach workers and volunteers working in HIV testing centers which has not been reported before in Lebanon. Moreover, since Lebanon's response to the epidemic is relatively better than the majority of the EMR countries, this evaluation of the intervention can serve as a model for the Region to achieve

better commitment to HIV and improve response toward the global targets.

In the present study, there was some amount of general information and knowledge with the trained health care workers, but there were some gaps. An educational activity will try to clear any misconception or misleading theory about HIV. These activities among health care workers are crucial to increase HIV knowledge and reduce high-risk behaviors among key populations.

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**Table 1. The pre and post-training comprehensive HIV/AIDS knowledge.**

Indicators of the stigma and discrimination towards PLHIV		True or False
1	Stigma is a disrespectful behavior toward another person living with HIV	True
2	Stigma is a reaction toward a disrespectful behavior between 2 PLHIV	False
3	Discrimination leads to humiliating a person living with HIV	True
4	Discrimination is a good reaction to differentiate between an HIV negative person and an HIV positive person	False

**Table 2. The pre and post-training comprehensive STIs knowledge.**

Indicators of the stigma and discrimination towards PLHIV		True or False
1	Stigma is a disrespectful behavior toward another person living with HIV	True
2	Stigma is a reaction toward a disrespectful behavior between 2 PLHIV	False
3	Discrimination leads to humiliating a person living with HIV	True
4	Discrimination is a good reaction to differentiate between an HIV negative person and an HIV positive person	False

\*\* Correct: meaning that 3 STIs were listed

**Table 3. The pre and post-training stigma and discrimination towards PLHIV.**

Indicators of the stigma and discrimination towards PLHIV		True or False
1	Stigma is a disrespectful behavior toward another person living with HIV	True
2	Stigma is a reaction toward a disrespectful behavior between 2 PLHIV	False
3	Discrimination leads to humiliating a person living with HIV	True
4	Discrimination is a good reaction to differentiate between an HIV negative person and an HIV positive person	False

**Table 4. Comparison between this study findings and previous studies through common indicators**

	Common indicators of the HIV knowledge	True or false	Study 2018 MSM [2] (n=376) %	Study 2018 SW [2] (n=189) %	Current study Pre-test (n=144) %	Current study Post-test (n=144) %
1	A person can get HIV from mosquito bites	False	71.1	51.9	84.8	98.6
2	A person can get HIV through saliva	False	75.0	41.8	66.2	71.6
3	A person can get HIV by sharing a meal with someone who is infected	False	85.4	49.2	83.2	97.8
4	A person can get HIV by getting injections with a needle that was already used by someone else	True	95.5	84.7	93.0	97.2
5	A pregnant woman infected with HIV/AIDS can transmit the virus to her unborn child	True	67.7	55.0	28.9	30.1
6	A woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding	True	46.9	55.0	54.1	93.5

	Common indicators of the HIV knowledge	True or false	Study 2018 MSM [2] (n=376) %	Study 2018 SW [2] (n=189) %	Current study Pre-test (n=144) %	Current study Post-test (n=144) %
7	A person with STIs has an increased chance to be infected with HIV	True	74.2	61.9	64.6	91.5

MSM: men who have sex with men; SW: sex workers;

**Figure legends:**

Figure 1. Impact of intervention on high knowledge of HIV by region

Figure 2. Impact of intervention on high STI knowledge by region

Figure 3: Impact of intervention on high stigma and discrimination knowledge by region

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