HIV-Related Knowledge and Stigma Among the General Population in the Southeast of Iran

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Abstract

Background: HIV-related stigma is a barrier to effective HIV responses among people living with HIV (PLHIV).

Objectives: The current study aimed at measuring knowledge, stigma, and associated factors among the general population in the Southeast of Iran through a self-administered questionnaire.

Methods: The current cross-sectional study was conducted on a convenience sample of 900 individuals in Kerman, Southeast of Iran, from July to September 2016. Data collection was completed using a three-part researcher-made questionnaire, including (I) demographic and background characteristics; (II) HIV-related stigma; and (III) HIV-related knowledge. Data were analyzed with SPSS version 20 using descriptive statistics and bivariable and multivariable linear regressions.

Results: Low, moderate, and high levels of stigmatizing attitudes toward PLHIV were reported by 39.1%, 57.8%, and 3.1% of the participants, respectively. Female gender (beta = 0.33, P value = 0.01), and not having a history of HIV testing (beta = 0.45, P value < 0.001) were positively associated with higher levels of stigmatizing attitudes, while a higher level of education (beta = -0.97, P value < 0.001) was associated with a lower level of stigmatizing attitudes.

Conclusions: Gender-sensitive educational interventions need to be developed to reduce the negative attitude towards PLHIV.

Keywords: Stigma, Attitude, Knowledge, People Living with HIV, Iran

1. Background

HIV-related stigma is considered one of the main obstacles to an effective response to the HIV epidemic worldwide (1). The Joint United Nations program on HIV/AIDS (UNAIDS) defines HIV related stigma as “a process of devaluation of people either living with or associated with HIV and AIDS” (2). Stigma could be manifested in two ways: (1) internal stigma, which leads to an unwillingness to seek help and access resources; and (2) external stigma, which leads to discrimination by HIV status or association with someone living with HIV/AIDS (3). Stigma and discrimination affect preventive measures of HIV transmission (4-7), and reduce PLHIV’s access to health services, social interactions, and supports (5, 8, 9); issues more pronounced in the context of conservative and Islamic countries (10).

In Iran, with the highest number of known PLHIV in the Middle East (i.e., 35,000), the HIV epidemic is mainly concentrated on people who inject drugs and female sex workers; however, a shift in the primary mode of transmission from drug use to sexual behaviors is evident (11-15). Although the onset of the epidemic in Iran was 33 years ago (1366), PLHIV continue to experience significant HIV-related stigma and are often shunned by the general public. While there is a growing literature on HIV-related stigma, the understanding of HIV-related stigma among the general population in Iran remains very limited (16, 17) and most studies focus on knowledge and attitudes of the
general population towards HIV (18-22).

Previous stigma studies mainly investigated the lived experiences of PLHIV and highlighted the high levels of internal and external stigma among them in a variety of contexts. For example, participants mentioned internal stigma such as silence, shame, and feeling miserable; they also reported experiencing external stigma by their families, the community, and the health-care system (3, 23-27).

2. Objectives

Due to the limited understanding of HIV-related stigma among the general population in Iran and the limitations of the existing narrow body of evidence (e.g., small sample size, qualitative study designs), the present study aimed at assessing HIV-related stigma among the general population in the Southeast of Iran in 2016.

3. Methods

3.1. Participants and Setting

The current cross-sectional study was conducted in Kerman (the largest city in the Southeast of Iran with a population of about 750,000 inhabitants) from July to September 2016. Since it was assumed that 50% of the general population had stigmatizing attitudes (28), with a 95% confidence interval and the precision level of 0.07, the sample size of 784 was calculated. Due to the convenience nature of the sample, the questionnaires were distributed among 1045 individuals that 900 of them answered the items (response rate = 86.1%).

Kerman City consists of four urban regions. Therefore, first, the city was divided into four strata. Within each stratum, neighborhoods were considered as clusters, and some neighborhoods were randomly selected. In each cluster, according to the sample size, trained interviewers selected participants from different crowded streets and public places (e.g., shopping centers, parks, transit stations) at different times of the day. According to the results of previous studies in Iran, people are more likely to disclose sensitive information (e.g., sexual health-related topics) in street-based surveys compared with household- or telephone-based surveys (29, 30). The study population included all people of the society above 18 years old able to make verbal communication. People not heard about HIV were excluded from the study. The questionnaire was self-administered; however, in case of insufficient literacy, the questionnaire was completed with the interviewer’s assistance.

3.2. Ethical Considerations

The study protocol was reviewed and approved by the Ethics Committee of the Kerman University of Medical Sciences (ethical code: IR.KMU.REC.1395.140). Before starting the interview, the participants were provided with information about the objectives of the study; they were also assured of the confidentiality of their information and the anonymity of the data. The participants provided verbal informed consent and could withdraw from the interview at any time.

3.3. Data Collection

Data collection was completed using a three-part researcher-made questionnaire, including (I) demographic and background characteristics; (II) HIV-related stigma; and (III) HIV-related knowledge. The questionnaire collected information on age (< 30 or ≥ 30 years), gender (male or female), marital status (single or ever married), education level (below high school diploma, diploma, or college/university degree), current occupational status (unemployed/housewife, university student, or employed), self-reported knowledge of high-risk behaviors (yes or no), and a history of such behaviors (yes or no), knowledge of HIV (continuous), sources of receiving information about HIV (scientific books, mass media, internet/social networks, family/friends/relatives, healthcare centers, or school/university), the history of HIV testing (yes or no), and the history of having communication with an individual living with HIV if they knew any (yes or no). Knowledge of HIV transmission was measured using a scale with three general items with the following response options: correct, incorrect, and I do not know. The sum of the scores yielded a final score ranging from 0 to 24 and then standardized based on a value from 0 to 20, with higher scores indicating higher knowledge of HIV. Then the standardized scores were categorized as poor (< 10), moderate (10 - 14), and high knowledge (> 14) (21).

HIV-related stigma was measured using the HIV-related stigma index, an 18-item scale with four subscales. The subscales were the patient’s social position with five items, social support with four items, social disease perspective with seven items, and social harassment with two items (Table 1). Items were scored based on a five-point Likert scale ranging from completely agree (score 5) to completely disagree (score 1), yielding an overall score ranged from 18 to 90, with a higher score indicating a higher level of HIV-related stigma (i.e., negative perception) towards PLHIV. The psychometric properties of the questionnaire were evaluated using content and
construct validity, and internal consistency and repeatability. To measure the validity of the questionnaire, the comments of 15 experts (i.e., nurses, midwives, social medicals, health education specialists, sociologists, and epidemiologists) were used. The content validity index was 0.98. The construct validity showed that the index had four dimensions: the patient’s social position (five items), social support (four items), social disease perspective (seven items), and social harassment (two items). The confirmatory factor analysis showed that the four-dimension index of stigma had suitable fit indices. In addition, the scale had a good internal consistency and stability (Cronbach’s alpha coefficient = 0.69 and intraclass correlation coefficient = 0.57).

For the analysis, the scores were standardized based on a value from 0 to 20, higher scores indicating higher HIV-related stigma. Then the standardized scores were categorized as poor (< 6), moderate (6 - 10), and high stigma (> 10).

3.4. Data Analysis

Descriptive statistics were reported for continuous (mean and standard deviation (SD) and categorical (absolute and relative frequencies) measures. To examine the factors associated with HIV-related stigma, first, multiple bivariable linear regression models were run in which HIV-related stigma was the dependent variable of the study, and demographic, background, and HIV knowledge were considered as independent factors. To deal with the issue of bias due to confounding, multivariable linear regression was also performed. A three-stage model-building approach was used to assess the effect of different variables on the stigma score. In the first stage, the correlation analysis of independent variables was conducted to identify pairs of variables that essentially contained the same information and had to be removed due to collinearity. In the second stage, the bivariable analysis was performed to identify variables associated with stigma. During this screening phase, a significance level of 0.25 was used. In the third stage, all variables with \( P < 0.25 \) were simultaneously inserted into a full model subsequently reduced by backward elimination. The procedure was repeated until all the remaining variables were significant at \( P < 0.05 \) (31).

Data were analyzed using SPSS version 20.

4. Results

4.1. Participants Characteristics

Totally, 900 males and females above 18 years old responded to the items in the questionnaire (response rate = 86.1%). Of the overall sample analyzed (n = 900), the mean ± SD age of participants was 35.89 ± 12 years, 50% were male, 33.8% were single, 57% reported having a university

| Table 1. Participants’ Responses to HIV-Related Stigma Index in the Southeast of Irana |
|---------------------------------|--------|--------|--------|
| Item                             | Disagree | No Idea | Agree  |
| **Dimension I: The patient’s social position** |          |        |        |
| The person living HIV should be ashamed of his/her disease. | 323 (74.7) | 91 (20) | 86 (12.3) |
| The family of PLHIV should be ashamed of having such a family member. | 230 (52.9) | 189 (38) | 281 (58.1) |
| In our society, PLHIV is rejected and forgotten by their families. | 288 (57.6) | 198 (39) | 227 (45.5) |
| In our society, PLHIV is rejected and forgotten by their close friends. | 359 (61.3) | 165 (31) | 176 (33.1) |
| PLHIV will lose their respect and social status. | 383 (64.8) | 143 (27) | 173 (31.4) |
| **Dimension II: Social support** |          |        |        |
| Physicians, nurses, and other care providers should treat PLHIV like other patients. | 525 (75) | 123 (17.6) | 52 (7.4) |
| PLHIV should be welcomed in social participation. | 566 (80.9) | 87 (12.4) | 46 (6.7) |
| PLHIV should be allowed to work and cooperate with others. | 599 (75.7) | 77 (11) | 23 (3.3) |
| PLHIV should be treated like anyone else in the society. | 288 (42) | 193 (28.4) | 227 (35.5) |
| **Dimension III: Social disease perspective** |          |        |        |
| All PLHIV are guilty. | 629 (90.3) | 59 (8.5) | 10 (1.4) |
| PLHIV are disgusting. | 15 (21) | 123 (17.6) | 560 (80.3) |
| Only those who involve in high-risk sexual relationships are at risk of HIV. | 49 (7.1) | 181 (26) | 466 (66.9) |
| PLHIV should be punished. | 16 (2.4) | 261 (37.9) | 413 (59.7) |
| HIV is a punishment of individual’s behavior in the past. | 62 (8.8) | 227 (32.6) | 408 (58.5) |
| Quarantine of HIV-positive individuals is the best method to control HIV. | 71 (10.1) | 216 (30.9) | 413 (59) |
| We should not buy fruits and vegetables from PLHIV. | 38 (5.4) | 264 (37.9) | 395 (56.7) |
| **Dimension IV: Social harassment** |          |        |        |
| In our society, PLHIV are verbally assaulted. | 372 (53.2) | 169 (24.1) | 159 (22.7) |
| PLHIV are physically assaulted in our society. | 160 (23) | 212 (30.3) | 327 (46.7) |

*aValues are expressed as No. (%).
degree, and 63.6% had a job (Table 2).

Overall, 74.3% of the participants believed that they were aware of the high-risk behaviors, 14.7% reported involvement in at least one high-risk behavior, and 16.9% reported a history of HIV testing. A significant proportion of the participants (89.8%) assumed they knew about HIV and mass media (radio, television, newspapers, and magazines) was reported as the main source of HIV-related information (86.1%). While knowing an individual living with HIV was reported by 9.4%, only 3.9% had regular communication with such individuals. The mean ± SD score of HIV-related knowledge was 16.05 ± 2.27 (on a scale ranging from 0 to 20). The high, moderate, and low HIV-related knowledge levels were respectively estimated among 87.6%, 11.7%, and 0.8% of the participants (Table 2).

The mean ± SD score of HIV-related stigma was 7.5 ± 1.94, ranging from 1.11 to 14.72 out of a possible range of 0 to 20. Of the total sample, 39.1% had a low level, 57.8% moderate level, and only 3.1% had a high level of HIV-related stigma towards PLHIV. According to the results of dimension I (patient’s social position), about 75% of the participants agreed/completely agreed that “PLHIV should be ashamed of their disease”. Also, 55% of them agreed/completely agreed that "PLHIV will lose their respect and social status". Based on dimension IV (social harassment), 53% of them agreed/completely agreed that "In Iran, PLHIV is verbally assaulted" (Table 1).

In addition, the scores of each dimension were calculated based on a value from 0 to 20. The means ± SD of patient’s social position, social support, social disease perspective, and social harassment were 12.02 ± 4.38 ranging: 0 - 20, 4.12 ± 2.95 ranging: 0 - 16.25, 12.02 ± 4.38 ranging: 0 - 20, and 4.59 ± 10.23 ranging: 0 - 20, respectively. Therefore, the lowest level of stigma belonged to the social support dimension, followed by social harassment.

4.2. Factors Associated with HIV-Related Stigma

Results of the bivariable linear regression showed that higher HIV knowledge, higher education level, and being a university student were associated with lower levels of HIV-related stigma (i.e., more positive perception), while having a female gender, lack of knowledge of high-risk behaviors, and no history of HIV testing were associated with higher levels of HIV-related stigma (i.e., more negative perception). Analysis of the multivariable linear regression demonstrated that higher levels of HIV knowledge (beta = -0.05, P value = 0.05) and having a high school diploma (beta = -0.64, P value = 0.006) or higher education (beta

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**Table 2.** Demographic and Background Characteristics of Participants to Estimate the HIV Knowledge and Stigma in the Southeast of Iran

| Variable                                      | Values |
|-----------------------------------------------|--------|
| Age, y                                        |        |
| < 30                                          | 316 (35.4) |
| ≥ 30                                          | 577 (64.6) |
| Gender                                        |        |
| Male                                          | 450 (50) |
| Female                                        | 450 (50) |
| Marital status                                |        |
| Single                                        | 304 (33.8) |
| Ever married                                  | 596 (66.2) |
| Educational Level                             |        |
| Below high school diploma                     | 87 (9.7) |
| Diploma                                       | 298 (33.3) |
| College/university                            | 513 (57.0) |
| Occupation                                    |        |
| Unemployed/housewife                          | 186 (20.7) |
| University student                            | 141 (15.7) |
| Employed                                      | 573 (63.6) |
| Knowing of high-risk behaviors, yes           | 668 (74.3) |
| History of being involved in high-risk behaviors, yes | 132 (14.7) |
| Ever tested for HIV                           | 152 (16.9) |
| Last-time HIV testing                         |        |
| Within last year                              | 35 (23.0) |
| Within 1-2 years ago                          | 34 (22.4) |
| Before 2 years ago                            | 83 (54.6) |
| Self-reported sufficient knowledge of HIV, yes| 802 (89.8) |
| Sources of information about HIVb             |        |
| Scientific books                              | 186 (22.2) |
| Mass media (radio, television,…)             | 720 (86.1) |
| Internet and social networks                  | 404 (48.3) |
| Family/friends/relatives                      | 236 (28.2) |
| Healthcare centers                            | 167 (20) |
| School/university                             | 355 (42.5) |
| Knowing an individual living with HIV         | 84 (9.4) |
| Having communication with PLHIV               | 35 (3.9) |
| HIV-related knowledge                         |        |
| High                                          | 788 (87.6) |
| Moderate                                      | 105 (11.7) |
| Low                                           | 7 (0.8) |
| HIV-related stigma                            |        |
| Low (positive perception)                     | 352 (39.3) |
| Moderate                                      | 520 (57.8) |
| High (negative perception)                    | 28 (3.1) |

*aValues are expressed as No. (%).

*bParticipants could select more than one choice.
the current study also found a significant inverse association between higher levels of HIV knowledge and lower levels of HIV-related stigma. Therefore, public education campaigns aimed at improving knowledge and reducing HIV-related stigma in the general population. Such approaches should also enhance communications among patients with HIV and the general population; for example, providing training programs for the general population to increase their awareness in the national AIDS day and other related events. The interventions in which individuals with HIV are involved may reduce the level of HIV-related stigma among the general population; an approach called the contact hypothesis (36) through which prejudice or discriminatory attitudes towards other groups, here people with HIV, can be mitigated via intergroup interactions (37).

Development of the stigma-reduction interventions is particularly imperative among females since the current study found that females had a higher level of HIV-related stigma. Females in Iran historically experience greater social, cultural, and contextual barriers (24, 38) that might impact their knowledge level and attitudes. The current study findings may indicate gender-based interventions in which females’ negative attitudes toward HIV can be effectively addressed. It is required that the government and policymakers make more attempts to scale up and implement stigma-reduction strategies such as HIV education and prevention campaigns at the community level, in which cultural and social norms are taken into account (39). Apart from the community-based interventions, other studies proposed a combination of multiple strategies at different levels of individual, interpersonal, organizational, and public policy to address the issue of HIV-related stigma and discrimination better (7).

It was also identified that around one-sixth of the participants reported the history of HIV testing. Subsequently, it was found that individuals reporting HIV testing had a greater level of positive attitude towards HIV and PLHIV compared with the ones that never did HIV testing. The current study did not explore the reasons for HIV testing among the participants; however, this proportion was consistent with prior studies in Iran (13.6%) (40) and other countries (13.1%) (21). Therefore, stigma reduction strategies may require addressing the importance of HIV testing. While previous studies predominantly focused on the impact of HIV-related stigma on the reduction of individuals’ desire to involve in HIV testing (41), the current study identified the other-way-round association. Although such reverse association might be due to the nature of the sampling strategies of the study, this may not impact the importance of both HIV testing and HIV-related stigma and discrimination.
Table 3. Correlates of HIV-Related Stigma Among the General Population in the Southeastern of Iran

| Variable                          | Bivariable Linear Regression | Multivariable Linear Regression |
|-----------------------------------|-----------------------------|---------------------------------|
|                                   | Beta | 95% CI | P Value | Beta | 95% CI | P Value |
| HIV-related knowledge             | -0.07 | -0.13, -0.02 | 0.01 | -0.05 | -0.1, 0.01 | 0.05 |
| Age, y                            |      |        |        |      |        |        |
| < 30                              | Ref. |        |        |      |        |        |
| ≥ 30                              | 0.26 | -0.01, 0.52 | 0.06 |      |        |        |
| Gender                            |      |        |        |      |        |        |
| Male                              | Ref. |        |        |      |        |        |
| Female                            | 0.34 | 0.08, 0.59 | 0.009 | 0.33 | 0.08, 0.58 | 0.01 |
| Marital status                    |      |        |        |      |        |        |
| Single                            | Ref. |        |        |      |        |        |
| Married/divorced/widow            | -0.17 | -0.44, 0.09 | 0.39 |      |        |        |
| Education level                   |      |        |        |      |        |        |
| Below high school diploma         | Ref. |        |        |      |        |        |
| Diploma                           | -0.72 | -1.19, -0.26 | 0.002 | -0.64 | -1.1, -0.39 | 0.006 |
| College/university                | -1.1 | -1.53, -0.65 | < 0.001 | -0.97 | -1.4, -0.53 | < 0.001 |
| Occupation                        |      |        |        |      |        |        |
| Unemployed/housewife              | Ref. |        |        |      |        |        |
| University student                | -0.55 | -0.98, -0.13 | 0.01 |      |        |        |
| Employed                          | -0.24 | -0.56, 0.08 | 0.15 |      |        |        |
| Knowledge of high-risk behaviors  |      |        |        |      |        |        |
| Enough                            | Ref. |        |        |      |        |        |
| Not enough                        | 0.45 | 0.16, 0.74 | 0.002 |      |        |        |
| Reported involvement in high-risk behaviors |      |        |        |      |        |        |
| No                                | Ref. |        |        |      |        |        |
| Yes                               | 0.14 | -0.23, 0.52 | 0.44 |      |        |        |
| History of HIV testing            |      |        |        |      |        |        |
| Yes                               | Ref. |        |        |      |        |        |
| No                                | 0.6  | 0.26, 0.94 | 0.001 | 0.45 | 0.1, 0.78 | 0.009 |

*aConfidence interval.

the study, the authors believe that the findings have important implications for both research and policy.

5.2. Conclusions

Approximately 60% of the study participants reported experiencing a moderate to a high level of HIV-related stigma towards PLHIV. Gender-based stigma-reduction strategies and increasing HIV-related knowledge have the potential to reduce negative attitudes toward HIV. While mass media-based strategies can still be considered as one of the main strategies, multiple approaches in which different levels of individual, organizational, and communi-
ties are considered can better address HIV-related stigma. Educational and preventive national campaigns in which a broad range of population is covered can be considered as an important strategy to reduce HIV discrimination and stigma.

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Footnotes

Authors’ Contribution: All authors equally participated in the design, implementation, drafting, and revision of the manuscript.

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Informed Consent: Before starting the interview, the participants were provided with the information that reviewed the objectives of the study and the confidential and anonymous nature of the data. The participant could withdraw from the interview at any time and provided verbal informed consent.

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