Awareness of STI and HIV among Indian Women: New Evidences from DLHS-4

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Abstract

Introduction: Sexually transmitted infections (STIs) are important cause of infertility in men and women. Some STIs increase the risk of HIV acquisition and transmission by three-fold or more. In 2011, 12% of females and 6% of males in India reportedly suffered from STIs. The total number of people living with HIV/AIDS in India was estimated at around 20.9 lakh in 2011, 39% of which were women. It is, therefore, important that population, especially women in reproductive age, should be aware of STI/RTI and HIV/AIDS. The aim of this study is to assess the awareness of STI/RTI and HIV/AIDS among ever married women in India and also to highlight their sociodemographic and economic correlates from District Level Household and Facility Survey (DLHS)-4 data.

Methodology: Data from 319,695 ever married women aged 15–49 years from 21 states/UTs of India, who participated in the DLHS-4 was considered. Chi-square and multiple logistic regression analysis were performed for analysis.

Results: Overall around 25% of women had heard of RTIs/STIs, whereas 66% had heard about HIV/AIDS. Adjusted analysis indicated that all the variables that were considered, viz., type of locality, caste, age, education of women and of their husbands, socioeconomic group, religion, marital status and water resource and toilet facilities used were significantly associated with awareness of STI and HIV.

Conclusions: Awareness of STI and HIV is still low among women in India. Comprehensive awareness programs and interventions are needed focusing on women, who are less educated and who are economically disadvantaged.

Keywords: STI, HIV, Awareness, Women, India

Introduction

Awareness of sexually transmitted infections (STIs)/reproductive tract infections (RTIs), their modes of transmission and methods of protection help in the prevention of STIs/RTIs and HIV infection. Individuals with STIs/RTIs have a significantly higher chance of acquiring HIV. Moreover, STIs/RTIs are also known to cause infertility and reproductive morbidity. More than one million STIs are acquired every day worldwide.

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According to National AIDS Control Organization (NACO) annual report 2013-14, an estimated 30 million STI/RTI cases are being reported every year in India. NACO estimated that in 2011, 12% of females and 6% of males attended Primary Health Centers for complaints related to STIs in India and the prevalence of STIs among sexually active adults is about 5–6%. Moreover, in 2012, 35.3 million people were living with HIV globally. The total number of people living with HIV/AIDS in India was estimated at around 20.9 lakh in 2011, 86% of whom were in 15–49 years age-group. Of all HIV infections, 39% (8.16 lakh) were among women.

Despite, the implementation of family health awareness campaign (FHAC) in India under the National AIDS Control Programme (NACP) to scale up HIV/AIDS awareness in vulnerable groups, the awareness about STI and HIV is quite low at national level. According to DLHS-3 (2007-08), 33% women were aware of RTI/STI and 59% of HIV/AIDS, in India. Though, this awareness is very high in metropolitan cities, it is evident that level of knowledge, myths and misconceptions about HIV and its transmission are very limited among the population in low socioeconomic groups. In the fourth stage of NACP, NACP-IV (2012–2017), the target is to reduce the new HIV infection cases by 50% annually. To achieve this goal, it is important to identify the factors which are associated to the population with low awareness of STI and HIV so that the vulnerable group can be targeted in the interventions like FHAC.

The objective of this study is to estimate the awareness about STI and HIV among ever married Indian women of reproductive age group from DLHS-4 data and also to assess the association between awareness and sociodemographic and economic profile of these women.

Materials and Methods

Sampling Design and Sample Size

District Level Health Survey (DLHS-4) was a cross-sectional survey conducted in 2011-12 in 21 states and union territories in India. Overall 319,695 ever married women aged 15–49 years were studied to assess the information on health aspects. A multi-stage stratified sampling design was followed in this survey. In urban areas a two-stage sampling design was used in which the primary sampling unit (PSU) was the NSSO Urban Frame Survey (UFS) blocks and second-stage sampling unit (SSU) was the household. The PSUs were selected by equal probability without replacement and households were selected by process of circular systematic sampling. Similarly, a two stage sampling design was followed in rural areas with villages as PSU and household as the second-stage sampling unit (SSU). The PSUs were selected by PPS with replacement and SSU were selected by circular systematic sampling.

Study Variable

The outcome variable in this study is awareness about RTI/STI and HIV/AIDS among women. Women were asked, “Have you heard about STI/RTI?” and “Have you heard about HIV/AIDS?” The options for both the questions were yes (coded as 1) and no (coded as 2).

Independent variables socioeconomic status (SES) included age, education, religion, caste, area of residence, marital status, water source and toilet facilities used in the households. For SES, first a wealth index was created on the basis of 20 households’ assets using principal component analysis and then five groups were created by quintile. This exercise was done separately for urban and rural samples. Age was grouped into four categories: 15–24, 25–34, 35–44 and 45 years and above. Education was divided into four categories: illiterate, middle, up to secondary and senior secondary and graduation and above. Marital status was categorized as currently married, married but guana not performed, separated/deserted/divorced and widowed.

Statistical Analysis

State weights were used to correct oversampling and to maintain the representativeness of the data as well as the statistical soundness of indicators calculated based on these data. Pearson Chi-square test and multiple logistic regression were used to examine statistical significance of associations between awareness of RTIs/STIs and HIV/AIDS and the sociodemographic and economic characteristics of women. In multiple logistic regression, no awareness of RTIs/STIs and HIV/AIDS (coded as 0) was assigned as the reference category. In this study, STATA-12 was used to analyze the data. Results were considered significant at 5 percent level of significance.

Results

Characteristics of Ever Married Women along with Their Sociodemographic and Economic Profile

Table 1 depicts the sociodemographic and economic profile of women who participated in the survey. Overall 25% women reported that they had heard about RTIs/STIs and around 66% of them had heard about HIV/AIDS. 59.69% women belonged to rural area. Age-
wise, 15.74% were aged between 15 and 24 years, 36.44% were between 25 and 34 years, 33.57% were between 35 and 44 years and 14.24% were 45 years or above. Caste-wise, most of the women were OBCs (35.66%) followed by 24.18% from SC. Most of the women were from Hindu religion (70.33%). It was observed that 29.49% women were illiterate while 26.58% were educated up to the secondary and senior secondary and 9.66% had done graduation and above. However, the spouses of women were more educated, reportedly 13.34% spouses had completed graduation or above, 30.39% were educated up to secondary and senior secondary. Around 93% women were currently married. In 64.82% households, women used piped/public tap/stand pipe water, 19.65% used hand pump/tube well and 11.75% dug well/spring. About the toilet facilities, 57.73% used flush or pour flush toilets whereas 16.24% pit latrines and 26.03% used field or jungle.

Table 1. Characteristics of Women

| Description of Categories and Sub-Categories | Number | Percent |
|---------------------------------------------|--------|---------|
| Heard about RTIs/STIs                       |        |         |
| Yes                                         | 79,771 | 24.97   |
| No                                          | 2,39,735 | 75.03 |
| Heard about HIV/AIDS                        |        |         |
| Yes                                         | 211,355 | 66.13   |
| No                                          | 108,274 | 33.87   |
| Type of locality                            |        |         |
| Rural                                       | 190,812 | 59.69   |
| Urban                                       | 128,883 | 40.31   |
| Caste                                       |        |         |
| SC                                          | 73,399 | 24.18   |
| ST                                          | 53,089 | 17.49   |
| OBC                                         | 108,268 | 35.66   |
| General                                     | 68,819 | 22.67   |
| Age                                         |        |         |
| 15–24                                       | 50,317 | 15.74   |
| 25–34                                       | 116,512 | 36.44   |
| 35–44                                       | 107,328 | 33.57   |
| 45 and above                                | 45,538 | 14.24   |
| Religion                                    |        |         |
| Hindu                                       | 224,788 | 70.33   |
| Muslim                                      | 29,021 | 9.08    |
| Christian                                   | 32,331 | 10.12   |
| Sikh                                        | 21,083 | 6.6     |
| Others                                      | 12,375 | 3.87    |
| Husband’s education                         |        |         |
| Illiterate                                  | 75,309 | 23.56   |
| Up to primary                               | 52,254 | 16.35   |
| Middle                                      | 52,315 | 16.37   |
| Secondary and senior secondary              | 97,147 | 30.39   |
| Graduate and above                          | 42,647 | 13.34   |
| Wife’s education                            |        |         |
| Illiterate                                  | 94,290 | 29.49   |
| Up to primary                               | 56,031 | 17.53   |
| Middle                                      | 53,499 | 16.73   |
| Secondary and senior secondary              | 84,985 | 26.58   |
| Graduate and above                          | 30,880 | 9.66    |
| Marital status                              |        |         |
| Currently married                           | 2,97,357 | 93.01  |
| Married but guana not performed             | 2,129  | 0.67    |
Bivariate Association of Awareness of STI and HIV with Characteristics of Women

Table 2 shows that all the indicators were significantly associated with awareness about STI/RTI and HIV/AIDS. Overall, 29.58% urban women had heard about STI as compared to 22.04% rural women, \( p \leq 0.001 \). More women in Sikh religion (32.08%) than other religious group had heard about STI, \( p \leq 0.001 \). Overall 50.58% women who were educated up to graduation or above reportedly had heard about STI while only 13.18% of the illiterate women had heard about the same, \( p \leq 0.001 \). 44.1% women whose husbands were graduate or above had heard about STI that was highest than others, \( p \leq 0.001 \). Around 40% women from upper SES group had heard about STI than 15.47% women from lower SES group, \( p \leq 0.001 \).

Regarding HIV, 73.69% urban women had heard about HIV as compared to 61.13% rural women, \( p \leq 0.001 \). More women from Christian religion (74.07%) than other religious groups had heard about HIV, \( p \leq 0.001 \). Significantly, more women who were educated up to graduation or above, reportedly had heard about HIV (93.16%), \( p \leq 0.001 \). Around 80% women from upper SES group reportedly had heard about HIV than 51.38% women from lower SES group, \( p \leq 0.001 \). Most of the women who used packaged/bottled water (80.9%) had heard about HIV than 67.96% who used tanker/ truck/ drum, etc. Overall 72.66% flush or pour flush toilet users had heard about HIV as compared to 50.76% field/ jungle/ other users.

| Description and Sub-Categories | Awareness about STI | | | Awareness about HIV | |
|---|---|---|---|---|---|
| | % | 95% CI | P Value | % | 95% CI | P Value |
| Type of locality | | | | | | |
| Rural | 22.04 | [21.53, 22.56] | <0.001 | 61.13 | [60.6, 61.66] | <0.001 |
| Urban | 29.58 | [28.87, 30.31] | | 73.69 | [72.92, 74.44] | |
| Caste | | | | | | |
| SC | 22.44 | [21.84, 23.05] | <0.001 | 22.44 | [21.84, 23.05] | <0.001 |
| ST | 18.94 | [17.86, 20.07] | | 18.94 | [17.86, 20.07] | |
| OBC | 24.05 | [23.52, 24.59] | | 24.05 | [23.52, 24.59] | |
| General | 33.65 | [32.85, 34.46] | | 33.65 | [32.85, 34.46] | |
| Age | | | | | | |
| 15–24 | 24.03 | [23.53, 24.55] | <0.001 | 67.54 | [66.76, 68.32] | <0.001 |
| 25–34 | 26.88 | [26.3, 27.47] | | 70.02 | [69.03, 71] | |
| 35–44 | 24.98 | [24.32, 25.66] | | 64.6 | [63.32, 65.86] | |
| 45 and above | 21.66 | [20.91, 22.43] | | 58.27 | [56.88, 59.65] | |
| Religion        | Hindu   | 24.74 [24.07, 25.43] | <0.001 | 65.12 [63.87, 66.34] | <0.001 |
|-----------------|---------|----------------------|--------|----------------------|--------|
| Muslim          | 25.97   | [24.6, 27.39]        |        | 61.63 [60.32, 62.92] |        |
| Christian       | 23.13   | [22.16, 24.14]       |        | 74.07 [72.86, 75.25] |        |
| Sikh            | 32.08   | [30.58, 33.62]       |        | 71.85 [70.28, 73.37] |        |
| Others          | 21.27   | [19.56, 23.08]       |        | 65.04 [62.72, 67.3]  |        |
| Husband’s education | Illiterate | 13.18 [12.72, 13.65] | <0.001 | 43.37 [42.75, 43.99] | <0.001 |
|                 | Up to primary | 20.18 [19.69, 20.68] |        | 59.04 [58.19, 59.88] |        |
|                 | Middle   | 23.84 [23.39, 24.3]  |        | 68.7 [67.95, 69.43]  |        |
|                 | Secondary and senior secondary | 29.19 [28.76, 29.63] |        | 76.44 [75.79, 77.09] |        |
|                 | Graduate and above | 44.1 [43.31, 44.89]  |        | 88.55 [88.04, 89.05] |        |
| Wife’s education | Illiterate | 12.67 [12.27, 13.08] | <0.001 | 42.22 [41.58, 42.86] | <0.001 |
|                 | Up to primary | 19.53 [19.07, 20]   |        | 60.32 [59.53, 61.11] |        |
|                 | Middle   | 24.39 [23.91, 24.88] |        | 72.27 [71.69, 72.85] |        |
|                 | Secondary and senior secondary | 33.48 [32.95, 34.02] |        | 82.72 [82.31, 83.13] |        |
|                 | Graduate and above | 50.58 [49.72, 51.45] |        | 93.16 [92.79, 93.51] |        |
| Marital status  | Currently married | 25.32 [24.77, 25.88] | <0.001 | 25.32 [24.77, 25.88] | <0.001 |
|                 | Married but guana not performed | 25.17 [22.74, 27.76] |        | 25.17 [22.74, 27.76] |        |
|                 | Separated/deserted/divorced | 23 [21.9, 24.13] |        | 23 [21.9, 24.13] |        |
|                 | Widowed   | 20.13 [19.25, 21.04] |        | 20.13 [19.25, 21.04] |        |
| Socioeconomic status (SES) | Lower | 15.47 [14.84, 16.12] | <0.001 | 51.38 [49.77, 52.98] | <0.001 |
|                 | Lower middle | 20.6 [20.08, 21.13] |        | 61.31 [60.39, 62.22] |        |
|                 | Middle    | 23.88 [23.13, 24.66] |        | 68.34 [67.24, 69.42] |        |
|                 | Upper middle | 28.65 [27.88, 29.44] |        | 73.14 [71.94, 74.3] |        |
|                 | Upper     | 37.95 [37.11, 38.79] |        | 79.27 [78.27, 80.24] |        |
| Water source used | Piped/public tap water | 23.94 [23.16, 24.73] | <0.001 | 66.64 [65.57, 67.69] | <0.001 |
|                 | Hand pump/tube well | 25.73 [24.84, 26.64] |        | 60.62 [59.35, 61.87] |        |
|                 | Dug well/spring etc. | 29.56 [28.55, 30.59] |        | 70.3 [69.15, 71.43] |        |
|                 | Tanker/truck/drum etc. | 26.75 [24.28, 29.39] |        | 67.96 [65.33, 70.47] |        |
|                 | Packaged/bottled water | 26.27 [24.43, 28.2] |        | 80.9 [78.97, 82.69] |        |
| Toilet facilities used | Flush or pour flush toilet | 29.39 [28.9, 29.89] | <0.001 | 72.66 [71.94, 73.36] | <0.001 |
|                 | Pit latrine | 27.96 [27.18, 28.75] |        | 67.91 [66.89, 68.92] |        |
|                 | Field/jungle/other | 13.76 [13.27, 14.26] |        | 50.76 [50.05, 51.47] |        |
Multivariate Association of Awareness of STI and HIV with Characteristics of Women

Table 3 shows the results of multiple logistic regression analysis for the association of sociodemographic and economic factors with awareness about STI and HIV. It was found that women in urban area were 10% more likely to be aware about STI as compared to rural women, p<0.001. As compared to general caste, women from OBC community were 20% less likely, from SC community were 6% less likely and from ST community were 11% less likely to be aware about HIV. As compared to 15–24 years age, women with age group 25–34 years were 16% more likely and 35–44 were 10% more likely while women older than 45 years were 6% less likely to be aware about HIV. Religion-wise, as compared to women in Hindu religion, women in Muslim and Sikh religion were 12% and 18% more likely whereas Christian and other women were 10% and 14% less likely, respectively to be aware about STI. Women who were graduate or more were 4.15 times more likely to be aware of STI as compared to illiterate women, p<0.001. Similarly, women whose husbands had graduate or higher degrees were 1.5 time more likely to know about STI than those whose husbands were illiterate, p<0.001. Women from upper SES group were significantly more likely to be aware of STI than lower SES group.

Multiple logistic regression analysis also shows that women residing in urban areas were 25% more likely of being aware about HIV as compared to rural women, p<0.001. Caste was also statistically significant, as compared to general caste women, OBC community were 4% less likely, from SC community were 6% less likely and ST community were 11% less likely to be aware about HIV. As compared to 15–24 years age, women with age group 25–34 years were 16% more likely and 35–44 were 10% more likely while women older than 45 years were 6% less likely to be aware about HIV. Religion-wise, as compared to women in Hindu religion, Christian, Sikh and other women were 64%, 37% and 16% more likely respectively whereas Muslim women were 12% less likely of being aware about HIV. Similarly, as the education of women and their husbands increased, the odds of being aware about HIV were increasing. Regarding marital status, as compared to currently married, married but guana not performed were not significantly associated. SES of women was statistically significant. Women from upper SES group were more likely to be aware of HIV than lower SES group, p<0.001. Water source was not significantly associated. On the other hand, toilet facilities used, pit latrine were 30% more likely and field/jungle/other were 29% less likely than using flush toilets, p<0.001.

Table 3. Multivariate Association of Awareness of STI and HIV with Characteristics of Women

| Description and Sub-Categories | Logistic Regression Awareness about STI | Logistic Regression Awareness about HIV |
|--------------------------------|----------------------------------------|-----------------------------------------|
|                                | Adjusted Odds Ratio | 95% CI | P-Value | Adjusted Odds Ratio | 95% CI | P-Value |
| Type of locality               |                         |        |         |                         |        |         |
| Urban                          | Reference               |         |         | Reference               |         |         |
| SC                             | 0.94                    | 0.90–0.98 | 0.007 | 0.94                    | 0.91–0.98 | 0.002 |
| ST                             | 0.75                    | 0.70–0.79 | <0.001 | 0.89                    | 0.83–0.94 | <0.001 |
| OBC                            | 0.80                    | 0.77–0.83 | <0.001 | 0.96                    | 0.92–0.99 | 0.021 |
| Other (General)                |                         |        |         |                         |        |         |
| Age                            |                         |        |         |                         |        |         |
| 15–24                          | Reference               |         |         | Reference               |         |         |
| 25–34                          | 1.14                    | 1.11–1.18 | <0.001 | 1.16                    | 1.13–1.19 | <0.001 |
| 35–44                          | 1.18                    | 1.14–1.21 | <0.001 | 1.10                    | 1.07–1.12 | <0.001 |
| 45 and above                   | 1.08                    | 1.04–1.11 | <0.001 | 0.94                    | 0.91–0.98 | 0.001 |
| Religion                       |                         |        |         |                         |        |         |
| Hindu                          | Reference               |         |         | Reference               |         |         |
| Muslim                         | 1.12                    | 1.03–1.22 | 0.01  | 0.88                    | 0.83–0.94 | <0.001 |
| Christian                      | 0.90                    | 0.85–0.95 | <0.001 | 1.64                    | 1.53–1.74 | <0.001 |
| Sikh                           | 1.18                    | 1.09–1.28 | <0.001 | 1.37                    | 1.28–1.48 | <0.001 |
| Others                         | 0.86                    | 0.78–0.94 | 0.002 | 1.16                    | 1.07–1.26 | 0.001 |
| Husband’s education            |                         |        |         |                         |        |         |
| Illiterate                     | Reference               |         |         | Reference               |         |         |
### Discussion

In this study, we assessed the awareness about STI/RTI and HIV/AIDS among ever married women in India and also highlighted their sociodemographic and economic correlates. Findings of this study show that the awareness of STI/RTI was quite low (24.97%) which was even lower than that in DLHS-3 survey (33%).

About two third of the women from reproductive age group have reportedly heard about HIV/AIDS. The proportion of women who were aware about HIV/AIDS has increased from 59% in DLHS-3 survey. Further, proportions of women who were aware of STI and HIV were significantly lower in rural areas (22.04% and 61.13%, respectively) than in urban areas (29.58% and 73.69%, respectively). Similar findings were reported in other studies conducted in other parts of India.\(^1\)\(^{19,23}\)

There was a gradient in the awareness with the increase in education of women as well as their spouses’ education. This indicates that education can play an important role in changing sexual behaviors and increasing knowledge about reproductive diseases. SES was another important indicator that was positively associated with STI and HIV awareness in our findings which show that women in lower SES groups were more likely to be unaware about reproductive problems and they need to be engaged in the interventions in more focused ways.

More women in the age group 35–44 years were aware about STI/RTI and HIV both than women from other age

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| Marital status | Currently married | Reference | Reference |
|----------------|-------------------|-----------|-----------|
| Married but guana not performed | 1.04 | 0.89–1.21 | 0.647 | 0.94 | 0.81–1.08 | 0.366 |
| Separated/deserted/divorced | 1.12 | 1.05–1.19 | 1.18 | 1.12–1.25 | 1.001 |
| Widowed | 1.11 | 1.05–1.16 | 1.18 | 1.13–1.24 | 1.001 |

| Socioeconomic status (SES) | Lower | Reference | Reference |
|----------------------------|-------|-----------|-----------|
| Lower middle | 1.29 | 1.24–1.34 | <0.001 | 1.42 | 1.36–1.48 | <0.001 |
| Middle | 1.23 | 1.18–1.29 | <0.001 | 1.44 | 1.37–1.50 | <0.001 |
| Upper middle | 1.40 | 1.35–1.46 | <0.001 | 1.59 | 1.53–1.66 | <0.001 |
| Upper | 1.61 | 1.54–1.69 | <0.001 | 1.61 | 1.53–1.69 | <0.001 |

| Water source used | Piped/public tap water | Reference | Reference |
|-------------------|------------------------|-----------|-----------|
| Hand pump/tube well | 1.17 | 1.10–1.24 | <0.001 | 0.89 | 0.85–0.93 | <0.001 |
| Dug well/spring etc. | 1.40 | 1.31–1.49 | <0.001 | 1.12 | 1.07–1.17 | <0.001 |
| Tanker/truck/drum etc. | 1.11 | 0.98–1.27 | 0.104 | 1.05 | 0.95–1.17 | 0.341 |
| Packaged/bottled water | 0.88 | 0.79–0.98 | 0.02 | 1.88 | 1.66–2.13 | <0.001 |

| Toilet facilities used | Flush or pour flush toilet | Reference | Reference |
|------------------------|-----------------------------|-----------|-----------|
| Pit latrine | 1.30 | 1.23–1.36 | <0.001 | 1.20 | 1.15–1.25 | <0.001 |
| Field/jungle/other | 0.71 | 0.68–0.75 | <0.001 | 0.90 | 0.87–0.93 | <0.001 |
groups. Result of multiple logistic regression analysis revealed that even after adjustment of all the variables included in the model such as age, area, caste, religion, education, SES and drinking water and toilet sources, all of these were significantly associated with the awareness of STI/RTI and HIV. This indicates that government should consider all of these indicators while designing interventions and awareness programs for awareness of STI and HIV at community level.

Conclusion

There is a need to launch some massive and comprehensive awareness program for women who are less educated and socioeconomically disadvantaged. Potential efforts are needed to improve educational level, particularly in rural areas, so that the awareness, morbidity and mortality due to RTI/ STI and HIV/ AIDS can decline.

Conflict of Interest: Nil

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