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ASSESSING THE ROLE OF EDUCATION LEVEL IN SHAPING HIV PREVALENCE: EVIDENCE FROM BIHAR, INDIA

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Abstract

Education is a crucial determinant of ethical and social values, decision-making, and risk-taking behaviour, all of which significantly influence health outcomes. Human Immunodeficiency Virus (HIV) remains a major global public health challenge, severely affecting the physical and psycho-social well-being of individuals. This study aimed to investigate the role of education level on the prevalence of HIV in Bihar, India. A purposive sample of 100 male participants aged 18–45 years, all with at least primary-level education, was selected. The sample included 50 HIV-infected individuals and 50 healthy controls from Kishanganj and Patna, Bihar, India. Data were collected using a self-prepared Client Interview Schedule (CIS) and analysed using the Chi-square (χ^2) test. The results revealed significant differences in education levels between the two groups, both for the participants and their parents. HIV-infected individuals were predominantly found to have only primary education, as were their parents. This lack of education may contribute to limited self-control, impaired decision-making, and underdeveloped ethical and social values. In contrast, healthy controls were more likely to have higher education levels, both personally and in their families, fostering better socialization and a reduced propensity for risk-taking. These findings highlight the importance of education in reducing the prevalence of HIV. Limited education in both personal and parental domains is linked to higher engagement in unsafe physical relations, which increases the risk of HIV infection. The study underscores the need for targeted psychological and social interventions for individuals infected with HIV, while promoting quality education as a preventive measure.

Keywords: Education Level, HIV, Risk-taking Behaviour, Unsafe Physical Relations.

Introduction

Human Immunodeficiency Virus (HIV) remains a significant global public health challenge, particularly in regions like Bihar, India, where new infections continue to rise. Bihar ranks third in India for new HIV infections (NACO, 2019). Education level—both personal and parental—plays a critical role in shaping individuals' health knowledge, attitudes, and behaviours, directly impacting their susceptibility to HIV.

Education equips individuals with the knowledge necessary to understand HIV, its

transmission, and preventive measures. Studies have consistently shown that higher educational attainment is associated with increased HIV awareness, safer sexual practices, and more frequent HIV testing (Bongaarts, 2019; Smith et al., 2020). Educated individuals are more likely to engage in prevention programs, adhere to safe sexual practices, and utilize healthcare services, all of which reduce the risk of infection (Bhattacharya et al., 2016). Conversely, individuals with lower educational attainment face significant barriers to accessing reliable health information,



increasing misinformation and engagement in risky behaviours, which heightens the risk of HIV transmission (Mensch & Lentzner, 2018; Auerbach et al., 2015).

The impact of education on HIV prevention has been widely studied, with research suggesting that education not only increases knowledge but also facilitates behaviour change by enhancing cognitive and emotional capabilities (Lee et al., 2017). Educated individuals are more aware of HIV risks and proactive in taking preventive measures (Brown et al., 2019). In regions with low educational attainment, individuals are more likely to engage in risky behaviours such as unprotected sex and drug use, leading to higher HIV transmission rates (Patel, 2017; Verma et al., 2016).

Personal Education and HIV

Personal education significantly influences individuals' knowledge of health issues and their ability to adopt preventive behaviours. Higher levels of education are strongly correlated with better access to and understanding of health information, including HIV prevention. Educational institutions provide structured opportunities for disseminating vital health information, helping individuals assess risks and adopt preventive measures (Mensch & Lentzner, 2018). Higher education is also linked to better communication skills, increased access to healthcare services, and the ability to engage in preventive health behaviours (Smith et al., 2020; DiClemente et al., 2015).

Numerous studies show that individuals with higher education are more likely to engage in HIV prevention programs, use condoms consistently, and seek HIV testing regularly (Bongaarts, 2019). This correlation between education and safer sexual practices suggests that interventions focusing on educational campaigns could be highly effective in reducing HIV prevalence (Smith et al., 2020). Research in African countries supports this, showing that higher education leads to better understanding of HIV transmission and safer sexual behaviours (Peltzer et al., 2019).

However, individuals with lower education levels often engage in risky behaviours due to a lack of reliable health information (Mensch & Lentzner, 2018). Without education, individuals may fail to recognize the risks associated with HIV, increasing vulnerability. Thus, educational initiatives that raise awareness about HIV and promote safe sexual practices are crucial in reducing transmission, especially in low-education regions like Bihar (Rosenstock et al., 2017).

Parental Education and HIV

Parental education significantly influences children's health behaviours and attitudes toward HIV. Children of parents with higher education are more likely to engage in health-promoting behaviours, such as seeking information on HIV prevention and practicing safer sex (Lee et al., 2017; Patel, 2017). Higher parental education levels are linked to better communication within families about health matters, leading to informed decision-making among children (Bhattacharya et al., 2016).

Educated parents are also more likely to challenge the stigma associated with HIV, creating a supportive environment for individuals living with the virus (Patel, 2017; Sood et al., 2018). Parental education impacts not only children's health behaviours but also shapes the socio-cultural environment in which these behaviours develop (Verma et al., 2016). In households with lower educational attainment, the lack of health education may lead to children being unaware of HIV risks and prevention strategies, which increases the likelihood of risky behaviours (Peltzer et al., 2019).

Education and Risk-taking Behaviour

Education plays a key role in shaping individuals' risk-taking behaviours, particularly in relation to HIV transmission. Studies consistently show that individuals with higher education levels are more likely to engage in safer sexual practices, such as condom use and HIV testing (Mensch & Lentzner, 2018). In



contrast, individuals with lower education levels often lack the knowledge to engage in safe practices, leading to higher risk-taking and increased HIV exposure (UNAIDS, 2023).

In Bihar, where traditional cultural norms and economic challenges persist, education alone may not suffice to mitigate risky behaviours. Socio-cultural norms, healthcare accessibility, and economic factors also influence the effectiveness of education-based interventions (Lee et al., 2017). Thus, while education increases awareness, a comprehensive approach combining education with healthcare access and social support is essential for effective HIV prevention.

Objectives

1. To assess the impact of personal education on HIV Prevalence between HIV-infected individuals and healthy controls.
2. To assess the impact of father's education on HIV Prevalence between HIV-infected individuals and healthy controls.
3. To assess the impact of mother's education on HIV Prevalence between HIV-infected individuals and healthy controls.

Methodology

This study used a purposive sampling method to select 100 male participants aged 18–45 years from Integrated Counselling & Testing Centers (ICTC) in Kishanganj and Patna districts of Bihar, India. The sample included 50 HIV-

infected individuals and 50 healthy controls, all of whom had at least primary-level education

Inclusion Criteria

- a. HIV-infected individuals (Experimental group)
- b. Healthy individuals without a history of sexually transmitted infections (Control group)
- c. Participants with at least primary-level education

Data Collection Tool

Data were collected using a self-prepared Client Interview Schedule (CIS), which included sections on personal education level, parental education level, and risk-taking behaviours related to unsafe sexual practices. Educational levels were categorized as up to primary, middle to intermediate, graduate, and postgraduate.

Statistical Analysis

The data were analysed using the Chi-square (χ^2) test to identify significant differences in the education levels of HIV-infected individuals and healthy controls.

Results and Discussion

To examine the relationship between education level and HIV prevalence, two groups—HIV-infected individuals and healthy controls—were compared. The results are outlined below:

Personal Education and HIV Prevalence

The following table compares the personal education level of HIV-infected individuals and healthy controls.

Table 1: Comparison of Personal Education between HIV-infected Individuals and Healthy Controls

Education Level	HIV-infected individuals (N=50)	Healthy Controls (N=50)	χ^2	df	p
Up to Primary	18 (36%)	0 (0%)	41.92*	3	0.00
Middle to Intermediate	30 (60%)	22 (44%)			
Graduate	2 (4%)	21 (42%)			
Postgraduate	0 (0%)	7 (14%)			



* $p < 0.01$ indicates statistically significant difference between two groups.

Table 1 highlights a significant association between education levels and HIV prevalence. Among HIV-infected individuals, 96% had only primary or intermediate education, with just 4% completing graduation and none pursuing postgraduate studies. In contrast, healthy controls showed higher educational attainment, with 42% being graduates and 14% postgraduates. The Chi-square value ($\chi^2 = 41.92$, $p < 0.01$) indicates a significant difference, suggesting that lower education levels may increase vulnerability to HIV.

These findings align with research by Mensch and Lentzner (2018), Bongaarts (2019), and Smith et al. (2020), which emphasize that higher education correlates with better HIV awareness, safer sexual practices, and greater engagement in prevention programs. Patel

(2017) and Peltzer et al. (2019) further support the idea that lower education levels lead to high-risk behaviours, such as unsafe sex, due to limited health information. Auerbach et al. (2015) and Rosenstock et al. (2017) also found that education not only increases awareness but reduces HIV-related stigma, encouraging preventive behaviours. Conversely, lower education levels are linked to misinformation, higher risk-taking, and increased vulnerability to HIV, consistent with Verma et al. (2016).

Parental Education and Prevalence of HIV Infection

To examine the relationship between parental education and HIV prevalence, the education levels of fathers and mothers were compared between HIV-infected individuals and healthy controls.

Table 2: Comparison of Father's Education between HIV-infected Individuals and Healthy Controls

Education Level	HIV-infected individuals (N=50)	Healthy Controls (N=50)	χ^2	df	p
Up to Primary	45 (90%)	4 (8%)	41.92*	3	0.00
Middle to Intermediate	5 (10%)	31 (62%)			
Graduate	0 (0%)	12 (24%)			
Postgraduate	0 (0%)	3 (6%)			

* $p < 0.01$ indicates statistically significant difference between two groups.

Table 2 highlights a significant difference in the education levels of fathers between HIV-infected individuals and healthy controls. Among HIV-positive individuals, 90% of fathers had education up to the primary level, and 10% had intermediate education. In contrast, 62% of fathers in the control group had middle to intermediate-level education, with 30% having graduate or postgraduate education. The Chi-square value (41.92, $p < 0.01$) indicates a strong, statistically significant association between lower paternal education and higher HIV prevalence in children.

These findings emphasize the critical role of parental education, particularly fathers, in shaping socio-economic environments and health outcomes. Fathers with lower education may have limited access to resources and may struggle to promote healthier behaviours, contributing to increased HIV risk in the family. As Lee et al. (2017) noted, children of more educated parents are more likely to engage in health-promoting behaviours. Our study reflects this, with more educated fathers contributing to healthier decisions in their children. Additionally, Sood et al. (2018) demonstrated that parental education directly impacts children's health behaviours, including HIV prevention, which is



supported by our findings of a higher likelihood of safe sexual practices among children of more educated fathers.

Table 3: Comparison of Mother’s Education between HIV-infected Individuals and Healthy Controls

Education Level	HIV-infected individuals (N=50)	Healthy Controls (N=50)	χ^2	df	p
Up to Primary	48 (96%)	29 (58%)	20.83*	3	0.00
Middle to Intermediate	2 (4%)	12 (24%)			
Graduate	0 (0%)	6 (12%)			
Postgraduate	0 (0%)	3 (6%)			

*p < 0.01 indicates statistically significant difference between two groups.

Table 3 reveals a significant difference in the education levels of mothers between HIV-infected individuals and healthy controls. Among HIV-positive individuals, 96% of mothers had education up to the primary level, while 58% of mothers in the control group had at least middle-level education or higher. Additionally, 12% of control group mothers were graduates, and 6% had postgraduate education. The Chi-square value (20.83, p < 0.01) indicates a significant association between lower maternal education and higher HIV vulnerability in children.

These findings suggest that lower maternal education levels may contribute to limited health awareness and poorer health practices, increasing the risk of HIV infection. Higher maternal education is associated with better decision-making, healthier behaviours, and reduced high-risk activities, which can help protect children from HIV transmission. Verma et al. (2016) found that lower maternal education levels are linked to poorer health outcomes for children, supporting our study’s results. Educated mothers are more likely to provide their children with accurate information about HIV, helping to reduce transmission risk and promoting safer health practices.

Conclusion

This study highlights the pivotal role of education level in reducing HIV prevalence in Bihar. Both personal and parental education

levels were found to significantly influence HIV vulnerability, with lower education levels being strongly associated with increased risk-taking behaviours and higher HIV infection rates. These findings underscore the need for targeted educational interventions to address HIV in regions like Bihar, where low education levels are prevalent.

Educational programs should be designed to not only increase awareness about HIV but also reduce stigma and foster healthier sexual behaviours. By focusing on enhancing education at both individual and parental levels, particularly in rural and underserved areas, it is possible to reduce HIV prevalence and promote healthier decision-making among high-risk populations

Suggestions & Recommendations

1. Educational Initiatives

- Develop targeted programs to improve individual and parental education in vulnerable and rural areas.
- Promote universal primary education, especially for girls, to empower informed health decisions.
- Integrate HIV prevention into school curricula for effective youth engagement.



2. Psychological Support

- Implement programs to address the psychological impact of HIV and encourage healthier.

3. Community Engagement

- Expand awareness campaigns focused on family education, safe practices, and ethical decision-making.
- Foster community involvement in HIV prevention, especially in low-education regions.

4. Policy Advocacy

- Enhance access to education through inclusive policies targeting rural and underserved areas.
- Initiate parental education programs to encourage informed decision-making and risk reduction.

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