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Original Research Article

Interventional Study Assessing Impact of Health Education Tool on Knowledge of HIV Transmission in Serodiscordant Couples in Mumbai

Lakshay V. Beri[1], Pallavi S. Shelke[2], Shrikala M. Acharya[3]

[1]Assistant Professor, Adesh Institute of Medical Sciences and Research (AIMSR), Bathinda, Punjab

[2]Associate Professor, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai

[3]Additional Project Director (APD), Mumbai Districts AIDS Control Society (MDACS), Mumbai

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Corresponding author: Dr Pallavi S. Shelke

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Abstract

Introduction: Heterosexual serodiscordant couples are those in which one partner is HIV positiveand other is HIV negative. HIV negative individuals in such discordant couples are at a high risk of HIV infections and preventive interventions targeted at such individuals is the priority.

Objective: This study was conducted to assess the impact of interventional tool on the knowledge of HIV transmission in serodiscordant couples.

Material and Methods: Total 50 serodiscordant couples were selected from ART centre and their knowledge regarding safe sexual practices, benefits of condom use, role of exclusive breast feeding for HIV positive mother and care options for both HIV positive mother and the baby were assessed.

Results: Mean age of positive male and female partner was 39 (SD±4) years and 34 (SD±5) years respectively. Significant improvement was observed in the knowledge of HIV transmission prevention, condom usage and vertical transmission reduction post intervention (p value <0.05).

Conclusion: This study illustrates the interventions enhances the knowledge about HIV transmission reduction, vertical transmission prevention and condom usage among serodiscordant Indian couples. Therefore, conducting individual and group interventions seems to be beneficial among such population.

Keywords: HIV, Transmission Prevention, Knowledge, Serodiscordant Couples.

Background

India has the third largest HIV epidemic in the world. National Adult HIV prevalence in India was estimated at 0.26%, (0.22%–0.32%) in 2015; 0.30% among males and at 0.22% among females [1]. This proportion is small compared to most other middle income countries but because of India's huge population (1.2 billion) this equates to 2.1 million people living with HIV. In the same year, an estimated 68,000 people died from AIDS-related illnesses [2]. New HIV infections have peaked in 1995 and then started to decline. An estimated 87.58 thousand [36.45 – 172.90] new HIV infections occurred in 2017, meaning there has been an 85% decline in annual new HIV infections since the peak of the epidemic [3].

It has been estimated that the female partner of an HIV positive man has a 0.1 to 0.2% risk of becoming infected with HIV as a consequence of a single act of unprotected intercourse. It is estimated that the risk of HIV transmission through sexual intercourse from an HIV-positive male to an HIV-negative female is 1 in 10 for less than 10 unprotected contacts and around 1 in 4 after 2,000 contacts [4]. Serodiscordant Relationship is the term conjures up the image of Monogamous Heterosexual Couple where one partner is HIV positive and other HIV negative [5]. HIV negative individuals in discordant partnerships are at a high risk of infections and preventive interventions targeted at such individuals is the need of the hour [6]. Interventions targeting individuals in serodicordant relationships can be broadly classified as interventions targeting the uninfected partner that minimizes risk of acquisition (*e.g.*, PrEP) or interventions targeted towards the infected partner to minimize risk of transmission (*e.g.*, antiretroviral therapy) or interventions that can be targeted at both partners (*e.g.*, condom promotion) [5]. Without treatment, if a pregnant woman is living with HIV the likelihood of the virus passing from mother-to-child is 15% to 45%. However, antiretroviral treatment (ART) and other interventions can reduce this risk to below 5% [7]. In 2017, roughly half the 180,000 children newly infected with HIV were infected during breastfeeding [8].

Keeping these facts in mind, it was considered imperative to conduct a study to assess the current awareness about prevention of HIV transmission in the heterosexual serodiscordant couples. We hypothesized that interventional tool created in the manner which is culturally acceptable to the community can improve overall comprehension not only about HIV transmission but also gives understanding regarding wider frame of sexual risks and mother to child transmission prevention options. Hence current study was planned with the objective to assess the effect of interventional tool on the knowledge of HIV transmission in serodiscordant couples.

Material and Methods

Participants

Present study was conducted in Anti-Retroviral treatment (ART) centre of a tertiary care hospital in Mumbai after getting approval from Institutional Ethics committee. In India, ART centers are set up under National AIDS Control Programme with objectives to provide care, support and treatment to all PLHIV. These centers provide preventive and diagnostic services to patients. All clients detected HIV positive at ICTC are referred to the nearest ART centre and registered, irrespective of their clinical status (symptomatic or not) along with patient's demographic details and other relevant information. Current study participants were selected from above mentioned centre attached to a tertiary care hospital in Mumbai

Study participants were 50 heterosexual discordant couples who were enrolled for one year at ART centre in which HIV status of both the partners was confirmed with their medical records. Participants having homosexual partners and intravenous drug users were excluded from the study. Consent was obtained from all participants and confidentiality was maintained at all levels irrespective of HIV status. Data was collected using the predesigned pretested semi-structured interview schedule which comprised of information on socio-demographic profile, current sexual behaviour and contraception practices.

Development of Interventional Tool

The Focal Group Discussion and in depth interview data was analyzed transversely along set dimensions as a single body. The data was analyzed on the basis of a systematic coding, following the approach suggested by Saldana J [9]. This consists of a systematic coding of data according to a code list, in such a way as to identify similar patterns. The coded segments with a common theme through them were then grouped into categories. Health Education Tool (HET) was design as an educational tool to help serodiscordant couples to consider adoption of family planning practices while decreasing the risk of HIV transmission. Predominant categories were fertility practices, issues in management of serodiscordancy and programmatic interventions. Theflipchart was developed in Hindi language and interview was conducted to evaluate utility of the same. The contents of flipchart were safer sexual practices for discordant couples, benefits of condom use, care options for HIV positive mother and baby, role of exclusive breast feeding by HIV positive mother. HET was prepared with the help of following standard WHO references: a) WHO has designed a tool to help health care workers counsel women and men living with HIV and their partners on sexual and reproductive choices and family planning. It is also meant to help PLHIV make and carry out informed, healthy, and appropriate decisions about their sexual and reproductive lives [10]. b) Interventional health educational tool in the form flipchart was prepared which can be used by health facility and community health workers to spread the essential information related to HIV [11].

Follow up interview

Baseline data was recorded for 50 discordant couples who later on underwent intervention and given detailed information by means of flip chart. Afterwards they were considered for follow upinterview. Follow up interview as conducted immediately after health education. Changes in awareness of safe sexual practices, benefits of condom use, role of exclusive breast feeding for HIV positive mother and care options for both HIV positive mother and the baby were assessed.

Questionnaire followed by Intervention

1. What is Safe sex according to you?
2. Are you aware of non- penetrative safer sex intimacy options? Yes/No
3. Are you aware about benefits of consistent condom use? Yes/No
4. Are you aware about benefits of exclusive breast feeding for a baby of HIV mother? Yes/No
5. Are you aware of any effective contraceptive method to prevent transmission to your spouse?Yes/No
6. Are you aware of risk of transmission of HIV to the baby if you wish to become pregnant? Yes/ No. If yes, what are the care options you know of for mother and baby?

Measures and Data analysis

Demographic data on age and educational level were recorded at baseline. Additionally, participants provided a baseline report of sexual barrier products

and other methods used to prevent pregnancy. Continuous data summarized as mean and standard deviation and categorical data as frequency and percentage. The pre and post intervention difference in the awareness was tested by Mc Nemar test. P value less than 0.05 considered as statistically significant.

Results

In current interventional study, 50 serodiscordant couples participated amongst which 16 (32%) were female positive partner (women positive couples) and remaining 34 (68%) were males (men positive couples). The mean age of positive male and female partner was 39 (SD±4) years and 34 (SD±5) years respectively. The mean age of negative male partner was 39 (SD±4) years and that of negative female partner was 33 (SD±4) years. It was seen that 18 were illiterate while majority i.e. 27 had education up to secondary school. Only 11 had education of graduate and above.

Table 1: Education of the participants

Education	Number of participants	Percentage (%)
Illiterate	18	18.0
Primary	19	19.0
Middle	21	21.0
Secondary	27	27.0
Higher secondary	4	4.0
Graduate and above	11	11.0
Total	100	100.0

Table 2: Effect of the intervention on the knowledge about Safe sex and Non penetrative sexual intimacy (n = 50 couples)

Variables		BASELINE	POST INTERVENTION		p value
			Yes	No	
Awareness of Safe sex	Using condom	Yes	41	0	0.008*
		No	9	0	
	Using condom correctly and consistently	Yes	0	1	0.07
		No	7	42	
	Non penetrative sex	Yes	8	0	<0.0005*
		No	26	16	
	Number of sexual contacts	Yes	7	0	<0.0005*
		No	20	23	
Aware of Non penetrative sexual intimacyoptions		Yes	13	0	0.0001*
		No	37	0	

*McNemar Test, p value < 0.05 statistically significant

Baseline knowledge of 50 serodiscordant couples was firstly noted regarding awareness about safe sexual activity, non-penetrative sexual intimacy, barrier usage by male partners, HIV transmission prevention methods between partners, breast feeding and transmission risk from seropositive mother to baby and their available care options. Improved awareness after conducting health education sessions using flipcharts was recorded and assessed.

Out of 50 discordant couples, 9 couples who were not aware of condom as a method of

safe sexual practices before intervention were aware of it after intervention. This difference was found to be statistically significant (p value=0.008). Similarly there was significant improvement seen in the awareness about prevention of HIV transmission in terms of non-penetrative sexual act and limiting number of sexual contacts (p value<0.05). Awareness about various sexual intimacy options like oral stimulation, anal intercourse and mutual masturbation was significantly improved after intervention (p value<0.05).

Table 3: Effect of the intervention on the knowledge about Barrier method usage and Transmission prevention (n = 50 couples)

Variables		BASELINE	POST INTERVENTION		p value
			Yes	No	
Aware of benefits of barrier method usage	Prevent transmission of HIV	Yes	40	0	0.004*
		No	9	1	
	Prevent transmission of STIs	Yes	1	0	0.5
		No	2	47	
	Prevent pregnancy	Yes	26	0	<0.0005*
		No	13	11	
Aware of method of preventing trans-mission of HIV to partner	Use of Condom	Yes	14	14	0.064
		No	5	17	
	Use of condom correctly and consistently	Yes	15	0	<0.0005*
		No	16	19	

*McNemar Test, p value < 0.05 statistically significant

In case of knowledge about benefits of barrier methods, 40 couples were had baseline knowledge that barrier methods prevents HIV transmission to partners and intervention had significantly increased this understanding in all couples (p value <0.05), while no such relation was seen for STIs transmission prevention (p value>0.05). Similarly statistical significance was seen about knowledge of benefit of condoms as contraceptive after intervention (p value<0.05). Only 15/50 discordant couples were aware that consistent and correct use of condom could prevent transmission of HIV to the negative partner before intervention. This increased to 31post intervention. This difference was found to be statistically significant (p value<0.0005)

Table 4: Effect of the intervention on the knowledge about Breast feeding, Transmission risk and Care options for infected mother and baby (n = 50 couples)

Variables		BASELINE	POST INTERVENTION		p value
			Yes	No	
Aware of Exclusive breastfeeding of baby byHIV seropositive mother		Yes	3	0	0.0001*
		No	47	0	
Aware of risk of transmission of HIV to babyif wish to start family		Yes	33	0	1.0
		No	0	17	
Aware of Care options for	ART for mother and baby	Yes	26	0	<0.0005
		No	21	3	

mother and baby	Care of mother's health	Yes	2	0	<0.0005
		No	48	0	
	Family support	Yes	0	3	0.248
		No	0	47	
	Exclusive breastfeeding	Yes	0	3	0.248
		No	0	47	

*McNemar Test, p value < 0.05 statistically significant

Benefits of exclusive breast feeding for HIV positive mother was known to only 3/50 discordant couples. Intervention had enhanced this knowledge in all the couples and the difference was statistically significant (p value <0.05). In terms of care options available for mother and baby, 26/50 couples enumerated ART as one of treatment modality before intervention. Intervention had raised this numbers to 47/50 couples and difference was found to be statistically significant (p value <0.05). Only 2/50 discordant couples emphasized the importance of mother's health in management of HIV positive mother and the baby before intervention. Following intervention, all the couples stated that mother's health was equally important and this difference was statistically significant (p value <0.05).

Discussion

The current study was planned to improve the perception of various preventive methods against HIV transmission in serodiscordant couples in Indian scenarios. Development of educational tools which were in more accordance with the Indian population understanding is of upmost importance. Among 50 discordent couples, higher number of males (68%) was seen than females (32%). The mean age of positive male and female partner was 39 (SD±4) years and 34 (SD±5) years respectively. The distribution of positive partners who were illiterate and with primary education were nearly equal 18 (18%) and 19 (19%) respectively. Kumarasamy *et al* reported similar findings that more men were seen in discordant relationships [12]. Study findings were partially comparable with Nehra *et al* where the mean age of participants was 30 years [13]. Education level in majority of the couples (67%) was up to 10th class or higher. Mehra *et al* in there study mentioned 36.52 ± 9.80 years as the mean age of participants in discordant relationships [14]. Hernando V *et al* reported mean age as 32.3 years (SD: 6.7) for index men and 30.3 years (SD: 6.7) for index women [15].

After health education by means of a flip-chart given to 50 discordant couples, significant changes were observed in the knowledge about safer sexual practices, non-penetrative sexual intimacy options, advantages of condom usage in terms of HIV transmission prevention, its role as contraception, ART for maternal and child health care and availability of various maternal care options. Nehra *et al* reported significant improvement in the knowledge and attitudesregarding condoms as a method of safe sex practice following intervention among men as 9.4 (SD±3.08) pre intervention to 15.96 (SD±1.75) and among women as 16.4 (SD±5.19) preintervention to 22.4 (SD±2.87) post intervention (p value <0.001) [13]. Marfatia *et al* in their community-based study using a couple-based analysis to investigate the factors associated with men's use of condoms showed that condom use was viewed only as a way to space births or to avoid illicit sexual activities, not as a health promotion measure [6].

Present study didn't show any enhancement

relation with barrier usage in prevention of STI after intervention. This may be due to lack of acknowledgment regarding STIs other than HIV. Also no statistical significance was seen in perception of risk factors in relation to mother to child HIV transmission and role of breast feeding.

In a cohort study of 53 HIV serodiscordant couples, Allen *et al.* assessed the impact of an education and CVCT intervention on condom use and HIV seroconversion by using educational videos and facilitated discussion groups. The rate of condom use increased from 4% to 57% over a 1-year follow-up period [16]. Pérez-Jiménez *et al* in a qualitative study of Latino couples had reported increased awareness about the importance of condom use and of alternative safer sexual practices such as mutual masturbation amongst the couples [17].

Khawcharoenporn *et al* in Thailand conducted an interventional study on serodiscordant couple and reported that after intervention, significantly higher proportion of participants correctly responded to statements about routes of HIV transmission, transmission prevention strategies among serodiscordant couples including consistent condom use, PrEP use in seronegative partners, fertility management with prevention of horizontal and vertical HIV transmission, and risk behaviors reduction after the educational interventions (p value <0.05) [18].

The considerable contribution of serodiscordant couples to the burden of HIV/AIDS depicts the actuality that HIV-negative individuals in such couples are continually exposed to the infection and this group perhaps adds up to a significant target for HIV transmission prevention strategies like preexposure prophylaxis and HIV vaccine trials. Also special sessions on family counseling wherein the needs of discordant couples can be addressed especially when the female partner is positive can reduce incidence among the newborns.

Conclusion

In this study, mean age of positive male and female partner was 39 (SD±4) years and 34 (SD±5) years respectively. Intervention with the help of flipchart upgraded the baseline knowledge of serodiscordant couples in terms of HIV transmission to negative partner and availability of safer sexual practices (p value <0.05). Also role of barrier method in prevention of transmission and as contraceptives has upgraded post intervention (p value <0.05). Part of ART and breast feeding in prevention of vertical transmission found to be improved afterwards (p value <0.05). To summarize, upgrading knowledge of serodiscordant couples can curtail the overall incidence of HIV.

References

1. NACO: Annual report 2015-16. Department of AIDS Control. National AIDS ControlOrganization. Ministry of Health & Family Welfare. Government of India. Available from http://www.nacoonline.org/upload/REPORTS/NACO%20Annual%20Report%202015- 16.pdf
2. UNAIDS: Prevention gap report. Available from: www.unaids.org/sites/default/files/media_asset/2016-prevention-gap-report en.pdf
3. Government of India. India HIV Estimations 2017: Technical Report. New Delhi: National AIDS Control Organization and ICMR-National Institute of Medical Statistics, GovernmentofIndia;2018.Availablefrom :http://naco.gov.in/sites/default/files/HIV%20Estimations%202017%20Report_1.pdf
4. Wilde JT. CONCEPTION IN HIV-

DISCORDANT COUPLES, Second Edition, Published by the World Federation of Hemophilia (WFH), 2002; revised 2008.
5. Solomon SS, Solomon S. HIV serodiscordant relationships in India: translating science to practice. Indian J Med Res. 2011;134(6):904-911.
6. Marfatia YS, Naik E, Singhal P, Naswa S. Profile of HIV seroconcordant/discordant couples a clinic based study at Vadodara, India. Indian J Sex Transm Dis AIDS. 2013; 34(1):5-9.
7. Mother-to-child transmission of HIV [Internet]. www.who.int. [cited 2022 June 12]. Available from: https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/hiv/prevention/mother-to-child-transmission-of-hiv#:~:text=Globally%2C%20an%20estimated%201.3%20million
8. Start Free Stay Free AIDS Free — 2017 progress report [Internet]. www.unaids.org. Available from: https://www.unaids.org/en/resources/documents/2018/start-free-stay-free-aids-free-2017-progress-report
9. Saldana J. Coding manual for qualitative researches. SAGE Publications Led 2009.
10. Reproductive Choices and Family Planning for People Living with HIV Counselling Tool. [Internet]. World Health Organization. 2006. apps.who.int/iris/bitstream/10665/43609/1/9241595132_eng.pdf.
11. WHO. Flip chart for patient education: HIV prevention, treatment and care. 2006. Available at www.who.int/hiv/pub/imai/patient_flipchart.
12. Kumarasamy N, Venkatesh KK, Srikrishnan AK, Prasad L, Balakrishnan P, Murugavel KG, *et al*. Couples at risk for HIV infection in Southern India: characteristics of HIV-infected patients in concordant and discordant heterosexual relationships. Int J STD AIDS. 2010;21(2):96-100.
13. Nehra R, Bagga R, Jones D, Deepika D, Sethi S, Sharma SH, *et al*. A Group Intervention for HIV/STI Risk Reduction among Indian Couples. Health Promot Perspect 2013;3(2):137-46.
14. Mehra B, Bhalla P, Rawat D, Kishore J. A study of HIV-concordant and -discordant couples attending voluntary counselling and testing services at a tertiary care center in North India. Indian J Public Health. 2015; 59:306-9.
15. Hernando V, del Romero J, García S, Rodríguez C, del Amo J, Castilla J. Reducing sexual risk behavior among steady heterosexual serodiscordant couples in a testing and counseling program. Sex Transm Dis. 2009;36(10):621-628.
16. Allen S, Tice J, Van de Perre P, Serufilira A, Hudes E, Nsengumuremyi F, *et al*. Effect of serotesting with counselling on condom use and seroconversion among HIV discordant couples in Africa. BMJ. 1992;304 (6842):1605–9.
17. Pérez-Jiménez D, Orengo-Aguayo RE. Qualitative analysis of an educational intervention with HIV-discordant heterosexual Latino couples. P R Health Sci J. 2011;30(4):188-194.
18. Khawcharoenporn T, Srirach C, Chunloy K. Educational Interventions Improved Knowledge, Attitude, and Practice to Prevent HIV Infection among HIV-Negative Heterosexual Partners of HIV-Infected Persons. J Int Assoc Provid AIDS Care. 2020; 19:23.