**RESEARCH ARTICLE**

# A study of Family level Determinants on Adherence to Anti Retro Viral Therapy among Serodiscordant Couples in Karnataka.

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*Abstract*

**Introduction:** The success of Anti Retro Viral Therapy and prolongation of life of a HIV infected individual depends upon adherence to prescribed regimen of Anti Retro Viral Therapy (ART). A good adherence to ART treatment reduces the chances of HIV transmission, and for a serodiscordant couple, along with other positive prevention measures ART adherence helps them to prevent HIV transmission and maintain serodiscordancy

**Aims:** To study the adherence to ART and its family level determinants

**Methods:** A cross sectional study was conducted among serodiscordant couples, who were in serodiscordant relationships and who were on ART. Using a simple random technique, a sample of 277 was selected from 03 study sites of Karnataka namely Mysuru, Haveri and Chitradurga. Pretested structured interview schedule which was translated to local language *Kannada* was used for data collection. Ethical Approval was taken from Ethical committee of Santosh Medical College & Hospital and Karnataka State AIDS Prevention Society (KSAPS), Bengaluru

**Results:** 88.8% (Male = 88.2% & Female = 91.7%) adherence ($\geq$ 95%) was observed among the studied population. Among the family level determinants, level of education of spouse and socioeconomic status were found to be significantly associated with ART adherence (p<0.01). Positive practices like using condom with regular partners coexists with better adherence levels to ART medication.

**Conclusions:** PLHIVs who are in serodiscordant relationships, who are socioeconomically disadvantaged, have lower educational background in family should be focused in our care and support services in order to achieve better adherence levels in ART medication.

## Introduction:-

The success of Anti Retro Viral Therapy and prolongation of life of a HIV infected individual depends upon adherence to prescribed regimen of Anti Retro Viral Therapy (ART). [1, 2] Support from family and spouse is beneficial for a HIV infected individual to adhere to ART regimen [3].

Serodiscordant couple refers to two people (One HIV Positive and the other HIV Negative) who are in an ongoing sexual relationship in which both partners have tested for HIV and there has been full disclosure of HIV status. [4] Studies have shown that among PLHIV who are in stable relationships; it is possible that nearly half of them are in

serodiscordant relationships [5]. According to the recent estimations in India, with a Prevalence of 0.27% among adult population (15-49 years) there are 20.89 Lakh People Living with HIV [6], which indicates a great opportunity for the prevention and HIV care and support programs to mitigate HIV transmissions among serodiscordant couples, enabling them to live a healthier and longer life.

A good adherence to ART treatment reduces the chances of HIV transmission [7], and for a serodiscordant couple, along with other positive prevention measures ART adherence helps them to prevent HIV transmission and maintain serodiscordancy. [7, 8, 9] Studies on ART Adherence have identified personal habits, travel time and distance to take ART, side effects as some of the determinants related to ART adherence [10,11]. Even though many studies have studied role of Education and literacy of PLHIV for ART adherence, there is a paucity of information in India, about the role of Spouse's education in ART adherence; through this study we have made an effort to identify the role of partner's education on ART adherence, therefore this study focuses on study of family related variables related to ART Adherence among PLHIV who are in serodiscordant relationships

## Material and Methods:-
The study was approved by the Institutional Ethical Board of Santosh Medical College and Hospital, Ghaziabad and Karnataka State AIDS Prevention Society (KSAPS), Bengaluru. A cross sectional study was conducted between June 2014 to May 2015. A sample size of 277 was estimated for the study based on the available published literature [10]. Since this study was focusing on a selected sub group of PLHIV population, in order to have a sufficient sample frame, participants were selected from 03 sites of Karnataka namely Mysuru, Haveri and Chitradurga.

PLHIV who were in serodiscordant relationships and who were registered in public sector hospitals for Anti Retro Viral Therapy among these 03 sites were included for the study. Using a simple random technique index PLHIVs of serodiscordant status were enrolled for the study and informed consent was obtained in the local language Kannada, Pretested structured interview schedule was used for data collection. Information on Socioeconomic variables, education, Family related variables and ART adherence were collected.

Data analysis was done using SPSS software applying appropriate statistical tests of significance. Data was analysed by calculating mean, standard deviations and proportions. The tests of significance applied were Chi-square test. A *P*-value of 0.05 was considered to be statistically significant

**Results:-**

| Socio-demographic Variable | N | % |
|---|---|---|
| **Gender** | | |
| Male | 229 | 82.7% |
| Female | 48 | 17.3% |
| **Age Group** | | |
| <20 Yrs | 1 | 0.4% |
| 21-30 Yrs | 44 | 15.9% |
| 31-40 Yrs | 112 | 40.4% |
| >41 Yrs | 120 | 43.3% |
| **Level of Education of Index Partner** | | |
| No Formal Education | 74 | 26.8% |
| Primary Education | 79 | 28.6% |
| >Secondary Education | 123 | 44.6% |
| **Level of Education of Spouse** | | |
| No Formal Education | 77 | 27.9% |
| Primary Education | 112 | 40.6% |
| > Secondary Education | 87 | 31.5% |
| **Residence** | | |
| Rural | 189 | 68.7% |
| Urban | 86 | 31.3% |
| **Type of Family** | | |
| Nuclear | 197 | 71.1% |
| Joint | 68 | 24.5% |
| Extended | 12 | 4.3% |
| **Socio Economic Status** (as per the revised B G Prasad's classification) | | |
| >Rs.5156 | 54 | 19.6% |
| Rs.2578 – 5155 | 91 | 33.1% |
| Rs.1547 – 2577 | 73 | 26.5% |
| Rs.773 – 1546 | 55 | 20.1% |
| Below Rs. 773 | 2 | 0.7% |
| **Enrolled in to a Positive Network/Support Group** | | |
| Yes | 116 | 41.9% |
| No | 161 | 58.1% |

**Sociodemographic Profile:-**

229 (82.7%) were men, 68.7% were residing in rural areas, 71.1% of them were residing in nuclear families, 24.5% in Joint families & 4.3% were in Extended families. 26.5% (24.6% men & 37.5% women) of the total participants had no formal education & 27.9% (30.3% men & 16.7% women) of the spouses had no formal education. 41.9% (42.4% men & 39.6% women) were enrolled into any positive network or support group.

**ART Adherence:-**

ART Adherence for both ≥ 95% & ≥ 98.33% desired limits were calculated among Index PLHIVs who were in serodiscordant couples. 30.9% of the total PLHIV have missed ART dose in the past 01 month (Men = 31.0% & women = 30.4%).

| |
|---|
| **ART Adherence ≥ 98.33%** |
| 69.1% (Male = 69% & Female = 69.6%) |
| **ART Adherence ≥ 95%** |
| 88.8% (Male = 88.2% & Female = 91.7%) |

A higher proportion of PLHIV in the younger age group (41.9%) were found to be missing ART doses while compared to elder age groups; this difference was not found to be statistically significant. A higher Proportion of PLHIV residing rural area missed ART doses while compared to those who were residing in urban areas (32.6% Vs 26.7%), and this difference was not found to be statistically significant. PLHIV who were in nuclear families were having better adherence while compared to those who were in joint and extended families, and this difference was not found to be statistically significant.
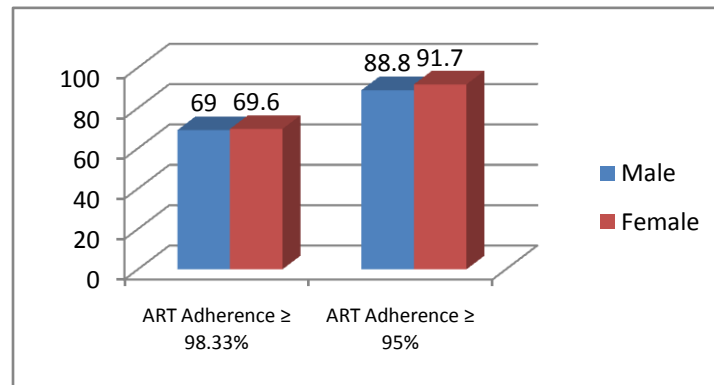


**ART Adherence (>98.33%) and Educational Status of Serodiscordant Couples:-**
A higher proportion of PLHIV of Lower Educational profile missed ART doses (39.2%) while compared those with Primary (32%) and more than secondary educational level (24.6%). This difference was not statistically significant. PLHIV with a spouse of having an higher educational status were found to be better adhering to ART while compared to those with a spouse of lower educational status; and this difference was found to be statistically significant ($P < 0.01$)
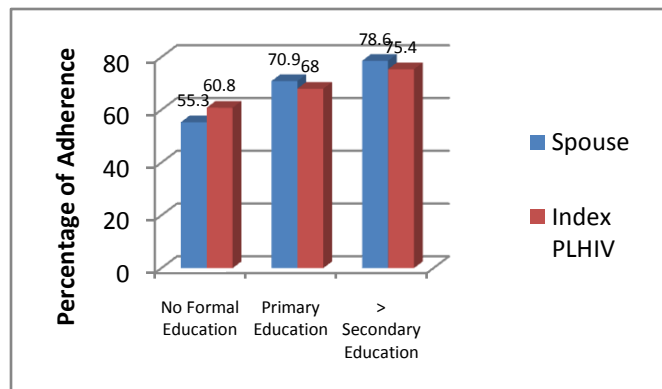
**Results & Analysis**

| Variables | Adherence > 98.33% | | | | Adherence > 95% | | | |
|---|---|---|---|---|---|---|---|---|
| | Adherence | Non Adherence | χ2 | P Value | Adherence | Non Adherence | χ2 | P Value |
| **Gender** | | | | | | | | |
| Male | 156 (69%) | 70 (31%) | 1.026 | >0.05 | 202 (88.2%) | 27 (11.8%) | 0.47 | >0.05 |
| Female | 32 (69.6%) | 14 (30.4%) | | | 44 (91.7%) | 4 (8.3%) | | |
| | | | | | | | | |
| **Age** | | | | | | | | |
| 21-30 Yrs | 25 (58.1%) | 18 (41.9%) | 4.60 | >0.05 | 37 (84.1%) | 7 (15.9%) | 2.44 | >0.05 |
| 31-40 Yrs | 73 (67%) | 36 (33%) | | | 103 (92%) | 9 (8%) | | |
| >41 Yrs | 90 (75%) | 30 (25%) | | | 105 (87.5%) | 15 (12.5%) | | |
| | | | | | | | | |
| **Level of Education of Index Partner** | | | | | | | | |
| No Formal Education | 45 (60.8%) | 29 (39.2%) | 4.71 | >0.05 | 63 (85.1%) | 11 (14.9%) | 2.32 | >0.05 |
| Primary Education | 51 (68.0%) | 24(32.0%) | | | 69 (87.3%) | 10 (12.7%) | | |
| >Secondary Education | 92 (75.4%) | 30 (24.6%) | | | 113 (91.9%) | 10 (8.1%) | | |
| | | | | | | | | |
| **Level of Education of Spouse** | | | | | | | | |
| No Formal Education | 42 (55.3%) | 34 (44.7%) | **10.01** | **<0.01** | 62 (80.5%) | 15 (19.5%) | **10.64** | **=0.05** |
| Primary Education | 78 (70.9%) | 32 (29.1%) | | | 99 (88.4%) | 13 (11.6%) | | |
| > Secondary Education | 67 (78.6%) | 18 (21.4%) | | | 62 (96.9%) | 2 (3.1%) | | |
| | | | | | | | | |
| **Residence** | | | | | | | | |
| Rural | 124 (67.4%) | 60 (32.6%) | 0.94 | >0.05 | 165 (87.3%) | 24 (12.7%) | 1.99 | >0.05 |
| Urban | 63 (73.3%) | 23 (26.7%) | | | 80 (93%) | 6 (7%) | | |
| | | | | | | | | |
| **Type of Family** | | | | | | | | |
| Nuclear | 139 (71.6%) | 55 (28.4%) | 2.13 | >0.05 | 177 (89.8%) | 20 (10.2%) | 1.15 | >0.05 |
| Joint | 41 (62.1%) | 25 (37.9%) | | | 58 (85.3%) | 10 (14.7%) | | |
| Extended | 8 (66.7%) | 4 (33.3%) | | | 11 (91.7%) | 1 (8.3%) | | |
| | | | | | | | | |
| **Socio Economic Status** (as per the revised B G Prasad's classification) | | | | | | | | |
| >Rs.5156 | 41 (78.8%) | 11 (21.2%) | **13.4** | **<0.01** | 51 (94.4%) | 3 (5.6%) | **9.16** | **=0.05** |
| Rs.2578 – 5155 | 71 (78.9%) | 19 (21.1%) | | | 85(93.4%) | 6 (6.6%) | | |
| Rs.1547 – 2577 | 42 (56.8%) | 32 (43.2%) | | | 59 (80.8%) | 14 (19.2%) | | |
| Rs.773 – 1546 | 32 (61.5%) | 20 (38.5%) | | | 47 (85.5%) | 8 (14.5%) | | |
| Below Rs. 773 | 1 (50.0%) | 1 (50.0%) | | | 2 (100%) | 0 | | |
| | | | | | | | | |
| **Using Condom with Regular Partner** | | | | | | | | |
| Yes | 143 (65.3%) | 74 (34.7%) | **6.98** | **<0.01** | 195 (87.4%) | 28 (12.6%) | 1.94 | 0.16 |
| No | 43 (84.3%) | 8 (15.7%) | | | 49 (94.2%) | 3 (5.8%) | | |
| | | | | | | | | |
| **Having a Child in the Family** | | | | | | | | |
| Yes | 166 (70.3%) | 70 (29.7%) | 1.24 | >0.05 | 216 (89.6%) | 25 (10.4%) | 1.24 | 0.26 |
| No | 22 (61.1%) | 14 (38.9%) | | | 30 (83.3%) | 6 (16.7%) | | |

PLHIV who were in Serodiscordant relationships and who use condoms with regular partners have higher chances of adherence to ART medication (65.3%) while compared to those who reported as not using condoms with regular partners (34.7%), and this difference was found to be statistically significant (p<0.001)

## Discussion:-

More than 95% of adherence is desired to achieving beneficial results in Anti Retro Viral Therapy [12]; studies conducted to study various correlates among different sub groups of PLHIV population have considered adherence in doses including for adherence to at least one dose, two dose or > 95% of adherence to ART treatment [13].

Since this study was performed on a sub group of PLHIV, we have considered non adherence as to both 98.33% and 95% of desired adherence limits among PLHIV who were in serodiscordant relationships. In this study 30.9% of the participants have missed at least one dose of ART in the preceding 04 weeks, which was similar proportion to rates of non-adherence reported in SWISS HIV cohort study [13].

A higher proportion of younger PLHIV were non-adhering while compared to elder age groups; similar results were published by the previous studies [11, 12]. We have found that education of index partner as well as spouse plays important role in the adherence to ART treatment; this shows that having a partner who is literate and well educated is beneficial for a PLHIV to know the importance of ART medication and adhere to prescribed treatment [14, 15].

### ART adherence and socioeconomic status:-

PLHIV who were in higher income categories were found to be having a higher adherence to ART while compared to those who were belonging lower income categories and this difference was found to be statistically significant. Similar findings were observed elsewhere due to lack of social and economic support to adhere to prescribed medication [02, 16].

Some studies have recorded a better usage of condoms among PLHIV who are on ART treatment, Practices of using condom with regular partners as one of the behavioral practices having an influence on positive practices for a PLHIV including adherence to ART [16]. We have found that PLHIV who were in serodiscordant relationships and who use condoms with regular partners are having an higher chances of better adherence to ART medication (p<0.01); this shows that good positive prevention practices coexists with better adherence to ART medication among serodiscordant couples.

Having child in the family was positively associated with having a better adherence with ART Medication; these findings need a more detailed qualitative understanding.

## Conclusions:-

Having a literate and educated spouse along with Index PLHIVs educational status contributes to better adherence among serodiscordant couples. Better Socioeconomic status of the family is one of the family related variables which influence ART adherence among serodiscordant couples. Positive practices like using condom with regular partners coexists with better adherence levels to ART medication. PLHIVs who are in serodiscordant relationships, who are socioeconomically disadvantaged, have lower educational background in family should be focused in our care and support services in order to achieve better adherence levels in ART medication.

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