ANALYSIS OF QUANTITATIVE ADHERENCE TO HAART REGIMENS AT TERTIARY CARE CENTER

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ABSTRACT

Background: HAART (Highly Active Anti-Retroviral Therapy) has changed the HIV infection from a rapid progressive illness (often fatal) to a more manageable chronic ailment. Although HAART is a major advancement, its adherence is a very important aspect as regards the achievement of significant viral suppression. **Material & Methods**: The present cohort study was conducted at our tertiary care hospital. The study duration was of six months from September 2008 to April 2009. At the commencement of study around 260 HIV patients were registered for ART out of which 120 patients were recruited for the study and were followed for six months. **Results:** In the present study the Mean Quantitative Adherence (MQNA) for each patient was calculated. 94 patients (78.33%) reported high Mean Quantitative Adherence i.e.>90% and 26 patients (21.66%) reported low Mean Quantitative adherence i.e. < 90%. **Conclusion:** The level of Overall Mean Quantitative Adherence (MQNA) was found to be high i.e. 92.14% and this high level was reported in 78.33 % patients. The adherence has shown dynamic behavior over time in our study.

Key words: Adherence, HAART, Follow-up, Quantitative.

INTRODUCTION

Adherence is generally defined as a patient's ability to follow a treatment plan, take medication at prescribed times and frequency and follow restrictions regarding food and other medications. Since the time of Hippocrates patients often tend to lie about taking their medicines **(1)**. Adherence to medication was a big problem in ancient times and still is today. Indeed one of the most challenging problems facing physicians is their ability to improve patient compliance with prescribed regimens **(2)**. Furthermore, WHO states the adherence as "The extent to which a person's behavior-taking medication, following a diet and/or executing lifestyle changes, corresponds with agreed

recommendations from a health care provider" **(3)**. Thus, adherence ensures active participation from patients in their own care and that good communication exists between patient and the health professional.

With the advent of complex treatment regimens i.e. HAART (Highly Active Anti-Retroviral Therapy) has changed the HIV infection from a rapid progressive illness (often fatal) to a more manageable chronic ailment **(4)**. Although HAART is a major advancement, its adherence is a very important aspect as regards the achievement of significant viral suppression. It has been demonstrated that very high

levels of adherence (>95%) are required for ART (Anti-Retroviral Therapy) to be effective in long term and to prevent the emergence of resistant viral strains (95% rule) (5). Resistance owing to poor adherence probably is inescapable for HIV virus which is persistent, prolific and error prone in its replication as poor adherence will provide the necessary selective pressure to promote growth of drug resistant viruses that arise naturally (6). Controversial ethical issues have also emerged regarding the provision of complex treatments to HIV/AIDS patients who may seem unable to adhere to them, and possibly contributing to passing of resistant HIV strains to others (7). Thus, potential public health importance of adherence to therapy in prevention of transmission of drug resistant virus has also been emphasized (8). Hence, the present study was conducted to analyze the HAART adherence.

MATERIALS & METHODS

The present cohort study was conducted at our tertiary care hospital. The study duration was of six months from September 2008 to April 2009. This was a study on adherence of HAART regimen in HIV/AIDS patients registered with the newly established Anti Retroviral Treatment Center (ART-C). At the commencement of study around 260 HIV patients were registered for ART out of which 120 patients were recruited for the study and were followed for six months. Written informed consent from each and every participant was taken prior to study. Clearance from Institutional Ethics Committee was taken. Detailed socio-demographic data were taken and recorded along with general physical and clinical examination. As this ART center comes under the national program, dedicated adherence counseling by the professional counselor and support of the peer group, and use of NACO supplied (free of charge) antiretroviral drugs5 was employed in the study, which did not include any protease inhibitors. The treatment strategy for all patients was inclusion of two nucleoside reverse transcriptase inhibitors and one non-nucleoside reverse transcriptase inhibitor (2 NRTI + 1 NNRTI). Inclusion criteria for the patients includes adults i.e. > 18 years of age and patients who were on ART for at least 1 month. At a time the medications were given for a period of 30 days. The patients were told to bring their remaining pills at every visit. The patients who failed to bring their remaining pills (and thus making pill count impossible) were assigned 0% adherence. So, the adherence was calculated every month to have six reading for each patient. The data were analyzed by using software's MS Excel 2010, Epi Info v7 and SPSS v22.

RESULTS

Total 120 patients were enrolled for the study. 62.5% were males and 37.5% were females. 59.66% of the patients were in age group of 30-45 yrs, 27.50% of patients in age group of 18-30 yrs and 13.33% patients were above 45 yrs of age. In present study 52.50% of the patients received AZT+3TC+NVP, 37.50% d4T+3TC+NVP and only 5.83% and 4.16% of patients were on AZT+3TC+EFV and d4T+3TC+EFV respectively. The adherence readings were obtained for each patient at every monthly visit, so a total of 719 adherence months were obtained, as one female patient died after fifth visit. Ten patients at one of their six visits forgot to bring their pills back, making pill count impossible, so they were assigned 0% adherence for that visit. The mean of the monthly Quantitative Adherence QNA of each visit of all patients, i.e, mVIQNA, mVIIQNA… mVVIQNA was taken and then plotted over time. The mean of the monthly Quantitative Adherence QNA was not constant over time. It showed a dip initially and then it increased but remained lower than the mean VIQNA. (Table 1)

Table 1: Trend of Quantitative adherence

Visit	Q_NA (%)
mV_IQ_NA	93.70
$mV_{II}Q_NA$	89.60
$mV_{III}Q_NA$	92.70
$mV_{IV}Q_NA$	92.80
mV_VQ_NA	91.61
$mV_{VI}Q_NA$	92.05

In the present study the Mean Quantitative Adherence (MQNA) for each patient was calculated. 94 patients

(78.33%) reported high Mean Quantitative Adherence i.e.>90% and 26 patients (21.66%) reported low Mean Quantitative adherence i.e. < 90%. (Table 2)

Table 2: Mean Quantitative Adherence (MQNA)

Level of adherence	Number	Percentage
High (≥90%)	94	78.33
Low (<90%)	26	21.66

DISCUSSION

The results of the present study showed high level of overall mean adherence i.e. 92.14%. High adherence was reported in our study in 78.33% patients. In contrast to this Paterson et al and Lucas et al observed low levels of adherence **(9)**. The findings were similar to the studies done by Orrell et al **(10)** and Etard et al **(11)** as regards the level of adherence and percentage of patients showing high adherence. Furthermore, our results fairly matched with two Indian studies, **(12)** which also reported the mean adherence more than 90% and above 80% patients reported higher adherence. Ours is an Indian study representing developing country showing high level of adherence which can be visualized by the meta-analysis done by Mills et al suggesting lower level of pooled adherence in North American studies and higher level of pooled adherence in African studies (**13**).

The trend of adherence in context with our study shows that during first visit patients adhere very well, followed by a decrease of adherence for next two months. Thereafter in our study the adherence gradually increased however, it could not reach the initial high level. Almost the similar variations were observed by Howard et al **(14)**. All such observations justify the dynamicity of adherence. The reasons for missing of doses by the patients were tally with the previous observations by Gifford et al **(15)**. In our study forgetting, being busy with other things and away from home were cited as most common reasons.

The present study showed highly significant association between knowledge about disease/belief in ART and adherence (p<0.001). This finding is similar to the previous studies by Chesney et al **(16)**. Psychological symptoms related to depression, hopelessness was found highly significantly associated with low adherence in concordance with previous studies **(17)**. The association of active drug abuse with low adherence was found significant in present study as in previous studies **(18)**. Alcoholism was also found to be associated with low adherence in contrast with the study of Paterson et al which found no relation between alcoholism and higher adherence **(5)**. Self-perception of social support has been reported as a facilitator of adherence **(19)**. Referral to support group, peer counseling has a well-established role in improving adherence **(1)**. In concordance with these studies, present study also found highly significant association between social support and adherence and between links with peer group i.e. PLHA and adherence.

CONCLUSION

We concluded from the present study that the level of Overall Mean Quantitative Adherence (MQNA) was found to be high i.e. 92.14% and this high level was reported in 78.33 % patients. The adherence has shown dynamic behavior over time in our study. It was maximum at the first visit and then a dip was observed. Thereafter, it increased but not up to the initial level.

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