

## **Exploration of Adherence Clubs as a Model of Care for Patients: a Literature Review**

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### **Abstract**

*The basis of outcomes assessment in epidemiology provides a framework for analyzing and understanding potential relationships between outcomes and medical interventions. Adherence clubs are a community and facility based intervention that is targeted at decongesting health facility, improving quality of care and retaining patients on ART and chronic medication. The study sought to model the relationship between health outcomes and the implementation of the adherence clubs. A literature review was conducted on the internal and external factors that generally influence health outcomes among adherence club patients. Due to the limited literature on adherence clubs patients, general patient related health outcome literature was used in the construction of the model. Common themes were grouped into broad categories to map out the model. The study shows that there are individual, economic, social, and environmental factors that generally influence health outcomes among patients. Furthermore, these are likely to be the leading elements to improved health outcomes among adherence club members.*

**Keywords:** *differentiated models of care, adherence clubs, health outcomes, chronic patients, antiretroviral therapy, HIV, health facility, decongestion*

### **Introduction**

Antiretroviral treatment (ART) has become a critical factor in HIV viral suppression, the prediction of disease progression and mortality (Fatti, Meintjes, Shea, Eley, & Grimwood, 2012). Despite the ART retention in formal healthcare facilities, many HIV positive people struggle with consistently attending to appointments or drop out of care entirely (Higa, Marks, Crepaz, Liao, & Lyles, 2012). In addition, South Africa's current shortage of professional healthcare workers, lack of quality care and high healthcare costs for ART has further decreased the ability of patients to receive HIV treatment in resource-limited regions (Fatti et al., 2012; Scanlon & Vreeman, 2013).

Healthcare outcomes are a measure of the end result of what happens to patients as a consequence of their encounter with the health care system (Krousel-Wood, 1999). Part of the health care system interventions that are targeted at improving health outcomes include the formation of adherence clubs. Adherence clubs have been implemented to support antiretroviral treatment expansion in resource-limited settings. These clubs involve 30 patients that are allocated to a group and meet at either a facility or a community venue for less than an hour every 2 or 3 months depending on the supply of medication (Bemelmans et al., 2014; Engla, 2010; Grimsrud, Lesosky, Kalombo, Bekker, & Myer, 2015; Krousel-Wood, 1999; Luque-fernandez et al., 2013; MSF, 2013; Nachega et al.,

2012; NDoH, 2016; Rasschaert et al., 2014; Tshuma, Mosikare, Alaba, Muloongo, & Nyasulu, 2017; Tsondai et al., 2017; Venables et al., 2016).

Retention in care and adherence to antiretroviral treatment (ART) and other chronic medication are critical elements of care interventions and are closely associated with optimal individual health outcomes (Boyles, Wilkinson, Leisegang, & Maartens, 2011; Decroo, Koole, Remartinez, Santos, & Dezembro, 2014; Ford et al., 2010; Nyasulu et al., 2015; Rahman et al., 2010; Stricker et al., 2014; Tshuma et al., 2017). For purposes of this study, though particular emphasis will be on patients that are in adherence clubs, we will use any literature that relates to interventions targeted at patients on ART and chronic medication that seek to retain patients in care.

The core of outcomes assessment in epidemiology is to facilitate a framework for analyzing and understanding potential relationships between outcomes and medical interventions (Krousel-Wood, 1999) Positive health outcomes include being alive; sound mental, physical, and social well-being (Parrish, 2010). The purpose of this study was to extrapolate the factors that influence health outcomes among adherence club patients.

## Study design

A literature review was conducted on the internal and external factors that generally influence health outcomes among ART and chronic patients. Common themes were grouped into broad categories to map out the model.

## Search strategy and restrictions

We searched the following electronic databases: CENTRAL (Cochrane Central Register of Controlled Trials), EMBASE, PsycINFO, PubMed, and Google scholar using relevant search terms. The search strategy was iterative, in that references of included studies were searched for additional references. Search terms included `adherence` AND `clubs` OR `health` OR `treatment` or `health outcomes`. Preferably peer-reviewed studies published in English between 2000 and October 2016 were included. Conference abstracts were eligible but not comments, editorials and unpublished reports.

## Data analysis

All literature collected was independently coded using ATLAS ti. v 6 by at least two members of the research team. Coding was both deductive (using a codebook constructed around internal and external factors) and inductive (allowing for themes to emerge from the data).

## Factors influencing health outcomes

The following section provides an overview of internal (*individual*) factors and external (*economic, social, environmental*) factors that generally influence health outcomes among patients.

### Individual factors influencing health outcomes

Language has become one of the factors that affect an individual's treatment adherence thus affecting their overall health outcome (Kardas, Lewek, & Matyjaszczyk, 2013). Patient-provider communication is crucial when patients encounter medical providers who do not speak their native language, thus has implications for quality and outcomes of care (Kardas et al., 2013). For example, poor patient-provider communication could result in inappropriate medical testing to diagnose a patient due to the inadequate communication of medical history from the patient (Morales, Lara, Kington, Valdez, & Escarce, 2002). A patient's health literacy has become central to their ability to adhere to their treatment. This has been defined as the individual's capacity to understand, obtain basic health information and services needed to make an informed health decision (Bhat et al., 2010).

Psychosocial factors also play a role that influences adherence to antiretroviral treatment (Bhat et al., 2010; Malta, Magnanini, Strathdee, & Bastos, 2010; Reda & Biadgilign, 2012; Springer, Dushaj, & Azar, 2012). Anxiety and depression are rather commonly present among HIV infected patients which have been linked to inadequate adherence (Briongos Figuero, Bachiller Luque, Palacios Martín, González Sagrado, & Eiros Bouza, 2011; Etienne, Hossain, Redfield, Stafford, & Amoroso, 2010; Reda & Biadgilign, 2012; Springer et al., 2012). It has been revealed that patients who have

depression were three times more likely to not adhere to treatment (Etienne et al., 2010). Some of the main characteristics of depressed patients' experiences include cognitive impairments, feeling of worthlessness, pessimism, and withdrawal from social support. Overall, this diminishes their ability and willingness to follow treatment regimens (Gonzalez, Batchelder, Psaros, & Safren, 2011).

Currently, it appears to be mixed reviews with regards to age and gender correlating with inadequate adherence as some studies reported that there is no correlation with the given factors (Bhat et al., 2010). However, one study has reported that females were significantly associated with poor adherence (Berg et al., 2004). Furthermore, another study has reported that older patients were more likely to have problems understanding their medical regimens as compared to younger patients (Martin, Williams, Haskard, & Dimatteo, 2005).

An individual's lifestyle behaviour such as smoking, alcohol consumption, and illicit drug use has been negatively associated with low treatment adherence (Etienne et al., 2010; Glass et al., 2009; Malta et al., 2010; Reda & Biadgilign, 2012; Springer et al., 2012). One study that was conducted in Botswana documented that nearly 40% of patients had missed a dose due to their alcohol consumption (Reda & Biadgilign, 2012). Moreover, patients who were active drug users were strongly associated with underutilization of antiretroviral treatment, poor adherence and poorer responses to therapy (Malta et al., 2010).

Various factors have been identified as limitations in the measurement of adherence to treatment such as reporting bias. Most previous study reports have relied on patient's responses as well as their memory of whether they do take their medication regularly (underreporting). Thus, limiting the ability to identify all facilitators and barriers to adherence (Bhat et al., 2010; Glass et al., 2009; Malta et al., 2010; Peltzer, Friend-du Preez, Ramlagan, & Anderson, 2010).

### **Social factors influencing health outcomes**

Socio-cultural factors such as stigma, fear of disclosure of HIV status, lack of social support and fear of stigma from family are some of the aspects that prevent ART adherence amongst patients (Bhat et al., 2010; Katz et al., 2013; Penn, Watermeyer, & Evans, 2011). Moreover, home stability and family support have been linked to better ART adherence (Kardas et al., 2013). One study has revealed that males who had long-term housing, living with a partner and belonged to an HIV support group had better antiretroviral adherence (Malta et al., 2010; Wasti et al., 2012). The convenience of picking medication from the community-based adherence clubs leads to a reduction in the numbers of club members sending their friends and family members to pick up the medication this increases interactions with healthcare worker (Tshuma et al., 2017).

HIV discrimination and stigma by family members and peers have become an important factor that drives to non-adherence (Bhat et al., 2010; Charurat et al., 2010; Katz et al., 2013; Reda & Biadgilign, 2012). This not only affects the patient's psychological experience but also affects treatment efficacy and the patient's overall health outcomes (Nozaki, Dube, Kakimoto, Yamada, & Simpungwe, 2011). Furthermore, patients have expressed that medication regimens fit poorly in their social life as they do not want to bring the medication wherever they go (Van Tam, Pharris, Thorson, Alfvén, & Larsson, 2011). A crucial component to treatment adherence is the patient-physician relationship. Patient's trust in their physicians ensures that there is emotional disclosure and believe that the physician understands their unique experience which could greatly affect patient outcomes (Flynn et al., 2013).

One of the studies has highlighted that there was a possibility of confounders as family and partner strain could be affected by other sources of support (Walen & Lachman, 2000). Another study has also highlighted this limitation, as certain family members were able to give HIV-positive individuals the support they need depending on the strain and burden they face. This entails that those HIV positive individuals who were infected through intravenous drug use face double burden of stigma from being HIV positive and for using drugs. Thus, affecting the amount of support family members are able to provide (Li et al., 2006).

Social support has been associated to increase medical treatment adherence, however, it has not been analysed that adherence could potentially influence social support within individuals (DiMatteo, 2004). There has been limited literature that examines the different effects support has on

adherence with regards to the sources of support and the different types available to an individual (emotional support from spouse, parents, friends and practical support from colleagues) (DiMatteo, 2004). Furthermore, it has been recommended that future researchers need to better understand the strength of the relationship a particular member has which may drive the perception of support (McDowell & Serovich, 2007).

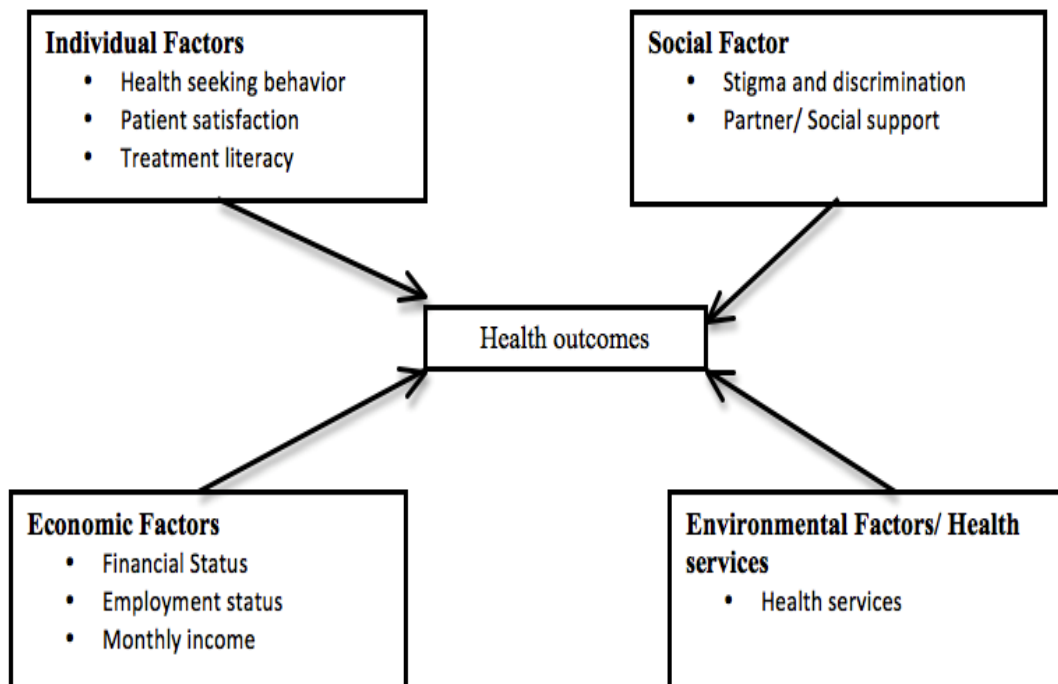
### **Economic factors influencing health outcomes**

A low socioeconomic status has greatly affected a patient's ability to consistently adhere to treatment which is common in developing settings (Kardas et al., 2013). This entails that patients are unable to obtain adequate healthcare services in a timely fashion due to high costs in food, medication, transport, hospital diagnostic tests and inability to afford health insurance (Kardas et al., 2013; Merten et al., 2010; Peltzer et al., 2010; Reda & Biadgilign, 2012; Wasti et al., 2012).

### **Environmental factors influencing health outcomes**

Physical and health system barriers have deterred patient's accessibility to healthcare services thus affecting their overall health outcomes. This could be due to inadequate public transportation to the hospital and the scarce distribution of healthcare providers in rural areas (Kardas et al., 2013; Peltzer et al., 2010; Reda & Biadgilign, 2012; Wasti et al., 2012). Furthermore, many working-age adults may are not able to take time off work to attend clinic appointments or provide transport for their family members who cannot drive themselves to the clinics. This makes the accessibility of healthcare services difficult to obtain for patients (Charurat et al., 2010).

### **Conceptual model of factors influencing health outcomes among adherence club members**



**Fig 1.** Factors influencing health outcomes among adherence club members

### **Discussion**

Among adherence clubs members health outcomes are influenced by individual, social, economic and environmental factors. Currently, there is limited literature that holistically looks at the relationship between individual, economic, social, environmental factors and health outcomes among patients on ART and other chronic diseases who are attending Adherence clubs. There is a need for a

quantitative study that will increase the understanding of how internal (individual) factors and external (economic, social, environmental) factors are generally impacting health outcomes in the context of patients on ART and other chronic medication that are in Adherence Clubs. The study must develop and empirically test a conceptual research model aimed at explaining how individual, social, economic and environmental factors are influencing health outcomes among patients attending Adherence Clubs.

The use of Structural Equation Modeling (SEM) in further studies of factors that improve health outcomes among adherence clubs will be suitable so as to answer a set of interrelated research questions in a single, systematic, and comprehensive way. This could be done by modeling the relationships among multiple independent and dependent constructs simultaneously (Anderson, Anderson, Gerbing, & Gerbing, 1988; Anderson & Gerbing, 1988; Cheah, Wan, Manan, & Zabidi-hussin, 2010; Hair, Ringle, & Sarstedt, 2011; Hooper, Coughlan, & Mullen, 2008). This capability for simultaneous analysis differs greatly from most first generation regression models such as linear regression, LOGIT, ANOVA, and MANOVA. These models analyses only one layer of linkages between independent and dependent variables at a time (Gefen, Straub, & Boudreau, 2000; Miles, 2003; Wouters, Heunis, van Rensburg, & Meulemans, 2009). The combined analysis of the measurement and the SEM enables measurement errors of the observed variables to be analyzed as an integral part of the model. Factor analysis could also be combined in one operation with hypotheses testing. The result will be a more rigorous analysis of the proposed research model and is a better methodological assessment tool (Byrne, 2013). This approach has not been applied in understanding factors influencing health outcomes among patients in Adherence Clubs hence we recommend its use for further research.

Due to the limited literature on adherence clubs patients, general patient related health outcome literature was used in the construction of the model. There is a need to do further literature review, looking at unpublished work, recent studies and conference presentations and other grey literature that relate to adherence clubs. The findings of the study will inform model designs and further studies in the area of adherence clubs. It will also inform areas of consideration in programming and service provision in communities and health facilities where adherence clubs are being implemented.

## Conclusions

Individual, economic, social and environmental factors play a pivotal role in influencing health outcomes among adherence clubs patients and patients in general. In programme design, there is a need to address these factors during the adherence clubs so as to improve the health outcomes.

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