Socio-demographic Determinants of Anti-Retroviral Therapy Adherence in South Africa: A Systematic Review from 2009-2014

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Socio-demographic Determinants of Anti-Retroviral Therapy Adherence in South Africa: A Systematic Review from 2009-2014

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Abstract

Background: South Africa has the highest number of people on ART in the world and the number is increasing especially with the upward review of CD4 for the initiation of ART in positive persons. Considering this increasing number, there is increased effort to ensure adherence to ART. Despite this, the adherence of South Africans to ART is unsatisfactory and socio-demographic factors play a major role. To assess this association, we did a systematic review of literatures to determine the socio-demographic factors that impact ART adherence. Methods: PubMed, Cochrane, PLoS one, BMC, ProQuest and Google scholar were searched to ascertain studies in South Africa from 2009 to 2014 on socio-demographic determinants of ART and selected 22 relevant articles for this review.

Results: The results of the demographic determinants were inconsistent and depended on the population group, setting and the context of the patients. However, social factors at material, informational and emotional levels were consistent and necessary determinant of ART adherence in most settings.

Conclusion: Social and demographic factors are necessary determinants of ART adherence. Social factors were alluded to in all studies reviewed as a necessary, enabling or sustaining factor through which other factors impact adherence. The evidence in this review suggests that adherence to ART could be improved if social and material support is available at all cadre of society.

Introduction

Background information: HAART (highly active anti-retroviral therapy) adherence is the backbone of ART (Antiretroviral therapy) success. In South Africa (SA) the availability of ART in the public sector has improved accessibility to the medication. Despite this, the uptake and adherence remain sub-optimal. Socio-demographic factors are among the major determinants of ART adherence.

Social factors in the context of ART are support available to the individuals on ART therapy and include all factors that assist individuals cope with stress and may be in the forms of material, informational or emotional support. Social supports also include social networks that give an individual a sense of belonging in the community. On the other hand, demographic factors are structural factors that contribute to support directly or indirectly by providing perceived support. For instance, marital status and socio-economic factors are demographic determinants that significantly impact ART adherence. Health literacy has also been positively associated with adherence.

Since the advent of HAART several studies have been done on determinants of ART adherence in South Africa in different settings and contexts producing contradictory results. It has also been confusing which factors are more important in ART adherence. This study seeks to consider the information provided by different studies and come up with some consensus opinion for South Africa especially as there are more studies borne by experience gained in this field.

Descriptive epidemiology: HIV transmission and perception has undergone a slow evolution in South Africa leading to better understanding and reduction of HIV related diseases, non-disclosure, stigmatization and victimization. In 2008 HIV was commoner among black, uneducated women between 15-24 years and the prevalence was influenced by violence and marginalization. In 2012 behavioral factors became prominent in the spread and prevalence of HIV in SA (12.3%) with people living longer with the disease due to availability and uptake of ART, and HIV control programs. In 2008 HIV was commoner among black, uneducated women between 15-24 years and the prevalence was influenced by violence and marginalization. In 2012 behavioral factors became prominent in the spread and prevalence of HIV in SA (12.3%) with people living longer with the disease due to availability and uptake of ART, and HIV control programs. Two million people were estimated to be on ART and the peak of HIV prevalence shifted to females from 30-34 years and married males from 35-39 years. However, the prevalence was highest (27.6%)
in provinces with predominantly blacks like Kwazulu-Natal and lowest (9.2%) in predominantly white provinces like Western Cape (Human science research council, 2013).

As the number of persons on ART increased the need for adherence increased especially as at least 95% adherence was needed to achieve desirable viral suppression (Wakibi, Ng’ang’a & Mbugua, 2011; Mills et al., 2006). Further, SA adopted the WHO option B (2013) guideline for the initiation of ART at CD4 count of 500 or less for every HIV positive persons including all pregnant and breastfeeding mothers, and for life thereafter (DOHSA, 2015) leading to increase in number of people on ART. ART has also become a preventive therapy for the infected (reducing mortality and morbidity) and the un-infected (preventing new infections) and considering that estimated one year post-ART adherence rate in SA is 64% (Woulter et al., 2009) it has become necessary to understand how socio-demographic factors impact adherence in SA.

In order to understand the determinants of ART adherence in SA, this review will evaluate recent studies on the socio-demographic determinants of ART in SA from 2009 to 2014. It will compare studies outcome (ART adherence) based on impact of social and demographic factors.

It will proceed by a statement of the problem, purpose of study, theoretical framework that will overarch the review, a description of methodology and synthesis of results. At the end of the review, an understanding of the main socio-demographic determinants of ART adherence in SA will be elucidated and recommendations made.

Methods

Problem statement:
Specific problem statements to be addressed in this systematic review are:
1. What are the socio-demographic determinants of ART adherence in South Africa?
2. What is the impact of social support on adherence to ART?

Purpose:
The aim of this review is to obtain evidence on the socio-demographic determinants of ART adherence from previously published literatures for South Africa and arrive at a consensus on the most consistent factors that determine ART adherence. It will provide basis for policy decisions in improving ART adherence, act as basis for new researches and provide evidence for positive social change in the areas of ART adherence, harm reduction and HIV prevention.

Knowledge of the impact of socio-demographic factors on ART adherence is necessary to further improve adherence, retention in ART programs and making non-adherence more predictable and preventable.

Theoretical framework:
Although several theories are used by the studies in this review, the social support theory will be used as a framework for this review. The theory of social support is in three parts including perceived support, received (informational or material) support and social integration (Lakey & Drew, 1997).

Perceived (emotional) support involves the stressed person's assessment of available support from friends, family and community in times of need (Lakey & Drew, 1997). This in turn is associated to our psychological well-being (social buttress theory) which has been demonstrated as a strong predictor of adherence (Bearman & La Greca, 2002).

Received supports deals with information about available support systems and structures for the stressed person at the time of need and health, and include resources like health facilities, disability grants, food schemes, HIV counselors and treatment supporters (Lakey & Drew, 1997). These act as support for the individual on ART and can impact adherence. For instance, William (2008) stated that support groups, HCP, food schemes and disability grant are ways of improving adherence. Social integration deals with the stressed person’s involvement in social relationships and networks that act as support like marriage and social organization (Lakey & Drew, 1997).

Among theories used by the studies in this review are: The socio-economic theory, Health behavior theory, theory of gender and power, patient centeredness, bio-psychosocial theory, demand and supply and the group based theories. One come theme with these theories is that they look at disease causation as in a social context; as a combination of medical, social, environmental and psychological factors. At the end of this review, this central role of social support on the socio-demographic determinant of ART adherence will be demonstrated.

Sources used for review: I did a literature search in PubMed, Cochrane, PLoS one, BMC, ProQuest and Google scholar and abstracted relevant themes.
Socio-demographic determinants of ART but excluded comparative studies of ART efficacy, cost-effectiveness and patients with specific additional psychological needs like illicit drugs.

Abstraction: The review included relevant literatures on determinants of ART adherence. Socio-demographic factors including social support, age, gender, marital status, residential area and educational status. The search included adult, pediatric, pregnant and other group of individuals on ART therapy. In each of these sites determinants of ART adherence was entered in the search area while the socio-demographic factors was added in the “and” area one at a time.

For instance, in Cochrane ART adherence entered in the search area while social and demographic determinant were entered in the “and” area. Relevant literatures published from 2009 to 2014 were extracted independently. Themes extracted from each study were reference, population group, study objective, theoretical framework, methodology, limitations and strengths, design, intervention and sampling methods, results and recommendations. Finally implication for practice, future research and social change were extracted (see appendix).

Key search terms: Searches were carried out using Human immunodeficiency syndrome (HIV) treatment adherence, antiretroviral therapy (ART) adherence, ART adherence and socio-demographic factors in South Africa, Social or Demographic factors and ART adherence. Later searches were conducted with ART adherence and marital status or poverty or income level or residential area or gender respectively.

Results

Synthesis of Research Findings: In this review there were 31 potential literatures screened which were reduced to 22 studies using the eligibility criteria (studies where social or demographic factors were considered the predictor variables and ART adherence outcome variable). The studies ranged from 2009 to 2014. In the appendix I presented the characteristics and major findings of the studies in the review. The single focus in this review is the Socio-demographic determinants of ART adherence in South African.

Result by Methodology & Design: Fourteen Quantitative studies with retrospective cohort commonest followed by cross-sectional and prospective designs studies. There were four qualitative, three mixed method studies and one research article. This review is predominantly made of quantitative and mixed methods which are statistically validated; the few purely qualitative studies added were relevant to the study. The intention of this study is not to compare the studies or arrive at a meta-analysis; the intention is to assess the findings of different authors in their varying context and subject as it relates to determinants of ART adherence.

Result of Social Determinants: Perceived (Emotional) and received (material, informational) are various aspects of social support (House & Kahn, 1985) that are considered in this review.

Emotional: Several of studies have alluded to the impact of treatment supporters in improving adherence. Yoder, Mkize, & Mzimande (2009) emphasize the positive role treatment supporters can play in improving adherence in a qualitative cross-sectional study of 180 participants interviewed by HCP (Health Care Providers). In the same vein, Ndiamo (2010) in a mixed study with 80 participants in an ART site demonstrated that the use of treatment supporters for patient improved adherence.

Training of HCP to act as treatment supporter is necessary for adherence to ART. Williams (2008) emphasized that these treatment supporters need to be trained and attend counseling sessions with patients so that they can be more effective. The use of the information-motivation-behavior (IMB) and counseling in some studies has been effective in improving adherence (Peltzer, Preez, Ramlagan & Anderson, 2010; Ndiamo, 2010). Peltzer, Preez, Ramlagan & Anderson (2010) used a mixed methodology with a sample of 735 treatment naïve patients using a cross-sectional design to determine that IMB can improve depression, marital and educational problems that impact adherence. In addition, Goudge & Ngoma (2011) demonstrated in a qualitative study that when self-esteem and social support were better, they influenced adherence to ART positively.

Patient’s adherence groups can improve adherence, reduce the structural barriers to ART in clinics and improve self-esteem. Lugue-Fernandez, et al. (2013) in a quantitative retrospective nested study among 20 communities in Khayalitsha demonstrated the benefits of belonging to a patient adherence group compared to traditional clinic care; they found that the patients that belonged to patient adherence group were more likely to adhere and have favorable viral loads. The members of this group also expressed satisfaction with the support they received just by listening to other’s stories. Further, Nglazi et al. (2013) demonstrated in a qualitative, retrospective cohort study in Gugulethu (a traditional low income township) that these support structures could help poor, uneducated and unemployed women that often
transfer-out of clinics for a lack of service and support. Material: Another form of support seen in this review is the provision of government grants, business grant and free food schemes. El-Khatib, et al. (2011) demonstrated that lack of financial and social support was associated with incomplete adherence. This could be due to the lack of income and poverty associated with un-employment, making transportation to clinic difficult, lack of for food before ARV or inability to procure ARV itself impacting on ART adherence.

Although, disability grants are available in South Africa for advanced AIDS patients on ART, the impact of withdrawing it when the patient eventually improves is not clear. Kagee (2014) stated that difficult doctor-patient conversation about renewal of the disability grant often impacted adherence to ART especially in resource limited settings. In addition, a qualitative study of 22 purposively chosen poor urban participants demonstrated that stable food supply was necessary to adhere to treatment regimen and remain healthy to participate in other activities of daily living (Goudge & Nsima, 2011). Communication could play a key role in adherence to ART. As Maqutu et al. (2010) described, the ownership of cell phone and ARV adherence are related. They mentioned that people with cell-phones had a better adherence to ARV and this was even better as age increased; while the mechanism for this is not clear, it is plausible that the social support provided by talking to trusted persons on the cell-phone may improve perceive social support leading to improved adherence.

Informational: Health providers who provide information and integration, and considered the perceived readiness of their patients for ART achieve a better success. As Maqutu et al. (2010) demonstrated in a retrospective study among 644 patients at the Center for AIDS Treatment (CAT), SA people testing for perceived risk of exposure had a higher risk of being adherent than people testing routinely like in the PMTCT (Prevention of Mother to Child Transmission) programs. Further, Maqutu et al. (2010) and Yoder, Pappin, Wouters & Booyssen (2012) stated that depression and anxiety must be recognized as they could impact adherence. They further identified stigma, lack of support and poor coping mechanism as risk factors for non-adherence.

In another study, 304 respondents in an ART site in Tshwane, South Africa were examined for the association between alcohol and ART using the alcohol dependence scores. Multiple regression model showed that alcohol use was independently associated with ART adherence (Morojele, Kekwaletswe & Nkosi, 2014). Naidoo et al. (2013) and Jaspan et al. (2011) also demonstrated that counseling for alcohol and stress improved adherence among patients.

Nursing training is essentially the backbone of the ART program in South Africa. This should not be overlooked if the nurses are to provide adequate service for ART success. Yoder, Mkize&Mzimande (2009) emphasized that support through counseling by health care providers is important for adherence. Chabikuli, Datorye, Nachega, & Ansong (2010) demonstrated among 100 out-patients in a clinic in Rustenburg that counseling can improve ART adherence. De Wet & du Plooy (2012) showed in clinics proving ART care in Free State Province that adequate nursing training is important for ART program success in clinics in Free State, SA.

Demographic:

Demographic factors produced mixed findings. For instance, the impact of gender on adherence is not consistent. Naidoo, et al. (2013) Suggested that adherence to dual medication-ART and Anti-TB medications were worse in males compared to their female counterparts. On the other hand, Shiau, Kuhn, Strehlau, Martens, McIlleron, et al. (2014) demonstrated that girls had a better response to a Nevirapine-based switch in their ART therapy. Whether these results are due to the ART regimen, additional TB regimen in this case or extraneous factors is not clear.

Some of the literatures stated that gender often act together with other factors-social or demographic. For instance, Nglazi et al., 2013 demonstrated that women are more likely to adhere when they are unemployed. Further, it was demonstrated in a cohort of 154 women initiating ART at a single site in Johannesburg that incomplete adherence was obtained with combination of factors in about half of the women-less than 30years old, 63% with less than 11 years of schooling, and 37% living in shacks (El-Khatib, Ekstrom, Coovadia,Abrams, Petzold et al., 2011).

Spousal support has been consistently mentioned in the literature as necessary for adherence. Mepham et al. (2011) alluded to testing in most women to be due to routine screening for PMTCT and not due to personal perception of risk and are unlikely to disclose status to spouse due to fear of domestic violence or victimization. On the other hand, Ndolo, 2010 stated that disclosure and presence of a partner are important factors for improved adherence. In addition, Maqutu et al. (2010) observed that female spouses often hid medications from their partners due to fear of possible domestic violence and victimization. Hiding of
medication often led to incomplete adherence because they avoid taking medication when spouses are present.

Support provided by somebody close to the patient can improve adherence. Fatti, Bock, Grimwood, & Eley (2010) demonstrated that rural children were vulnerable to non-adherence when care is provided by people other than their mothers. In the same light, another study recognized that when mothers were care-givers to their children a better adherence to ART was obtained than when provided by other care-givers (Jaspan et al., 2011). However, Jaspan et al., 2011 added that if mothers used alcohol adherence would still be impacted negatively.

Health systems planning to reduce structural barriers encountered when patients come for medication is necessary: Long waiting time, distant clinic, poverty, lack of food for taking medication, lack of support from staff, low staff to patients ratio, unavailability of medication have all been highlighted in various studies reviewed. Ncaca, Kranzer, & Orrell (2011) found that the need for proper systems management for drug and HCP availability is necessary. They stated that prevention of health services interruption is a vital part of ART adherence as missed doses can easily result to incomplete adherence and virological failure.

Lack of support by the health system can lead to varying behavior by the patient ultimately leading to incomplete adherence. The lack of consistent support by the primary health systems and its staff may be a catalyst driving some patients to use traditional care and encourage plurism in health care (Mosshabela, Schneider, Silal, & Cleary, 2012). Poor facility care may also encourage high rates of transfer-outs (Ngazi et al., 2013).

El-Khatib, et al. (2011) studied adherence and virologic suppression using quantitative secondary data analysis and determined that 53% of the less than 30year olds had incomplete suppression during the first 24 weeks on treatment. On the other hand, Shiau, et al. (2014) demonstrated that the younger age group (community place) had a better reduced viral load, VL< 400 and better CD4 compared to patients at workplace. Other studies reviewed supported the impact of employment status as a main determinant while some emphasized that adherence improved as the patient’s residual status changes from rural to urban, as age increases, as educational level dropped and among breadwinners (Maqutu et al., 2010).

One consistent finding between the social and demographic factors leading to incomplete adherence is the lack of social support-whether perceived, enacted or material. In the studies reviewed there were consistent association between the lack of positive social factors (anxiety, alcohol and no counseling) and demographic factors (lack of spousal support, employment and less than 11 years in school) with incomplete adherence as suggested in the social support theory.

The evidence in this review suggests that when support structures were present individuals coped better with stresses. It is also evident in most of the literatures reviewed that what improved adherence was not the absence of challenges for adherence, but the presence of support and ability to cope with stress from a well-structured or imagined support base. As suggested by the social buttress theory, our perceived support is important to our psychological well-being (Gellner, 1987).

**Discussion**

This review revealed that multiple demographic and social factors determine adherence. Although all literatures reviewed do not agree on the impact of these factors, the evidence suggest that age, sex, residential area (rural, urban or urban-rural) cohabitation, marital status and socioeconomic status do not usually act as sole determinants of adherence but act in combination with other factors like social support, cell phone access, being employed or not, use of medical insurance, support by HCP and belonging to a social group or treatment adherence group. Other factors that act together with demographic factors include disclosure status, the availability of social grants or food schemes, peer group, personal experience of HIV on family members and taking the test on the basis of personal exposure. This result is consistent with findings in other parts of the world (Tam et al., 2012; Falagas et al., 2008).

The social factors associated with ART adherence are many. This review demonstrated that social support consistently impact adherence to ART. In all 22 literatures reviewed social support was mentioned in all as a precursor, associated factor, direct reason or possible solution for improved adherence to ART. Beginning from the spouse, friends, care giver and family to the community; adherence was better when there is disclosure and support. On the other hand, adherence in some situation could lead to victimization and domestic violence, emphasizing the need for couple counseling and testing. For instance, Mohlala, Boily and Gregson (2011) demonstrated that when men were invited to attend antenatal and VCT sessions with their spouses intimate partner violence was less and adherence to ART improved.
At the community level, it was demonstrated that community groups or treatment adherence groups were useful while the traditional support groups were mentioned by some research reviewed as impacting ART adherence. The use of cell-phone was strongly related to the improvement of ART adherence as a form of group therapy. Several studies emphasized patient dissatisfaction with Health workers due to poor services, lack of empathy and disrespect, and this often led to Plurism and transfer-outs.

Lay counselors and treatment supporters are identified as sources of support. They encourage ART adherence and trace patients for follow-up. Family members or anybody chosen by the patient have often been mentioned by some studies to supervise adherence in a way similar to directly observed treatment (DOT) supervision in tuberculosis patients. Aditya, et al. (2010) emphasized the benefits of implementing DOTS among ART patients to encourage adherence; they contend that though DOT may not be feasible in the long-term, it benefit in the depressed patients with risk of incomplete adherence and in the short-term is debatable.

Several researches in this review agree that the training of treatment supporters, the provision of disability grant is still controversial. In South Africa AIDS patients are illegible for a disability grant once classified and are unemployed to ease recovery and initiation of therapy. While disability grants are good source of support for unemployed AIDS patient, there is no empirical evidence of its benefits. As Kagee (2010) stated there are often tension in the doctor-patient relation when issues of disability grants are discussed and this may impact adherence. Food scheme and other forms of material support may be more sustainable in SA.

Visual aids, pill counters and other electronic devices were said to improve adherence. When these are used properly, they could be a good source of support for adherence. While this is laudable, we must remember that some literatures have alluded to the sharing of medication as a problem, so HCP using this method must keep in mind that, an empty pill bottle does not tantamount to adherence. Further, newer methods like Wise pill and unannounced pill counts are continuously being used to prevent human errors and deceit in adherence monitoring even in resource limited settings (Haberer, et al., 2010). These methods also detect early viral rebounds and counteract incomplete adherence early (Haberer, et al., 2010)

Good health systems management can be a great source of support for many patients. In this review structural barriers like overcrowding were mentioned as a source of non-adherence. Structural barriers compromised patient confidence and confidentiality leading to incomplete adherence. The high patient to staff ratio lead to reduced time spent with patients leading to misunderstood regimens, transfer-out, plurism and death before commencing ART. Decentralization, use of electronic health records, fast-tracking of sick patients and reduced barriers to treatment (Ingle, 2010) are suggested to reduce structural bureaucracy in ART clinics.

In the end, the socio-demographic determinants of ART adherence including demographics, economics and education will need strong social support base at all levels at all level of society to succeed.

Strength and Limitations:

Each study used in this systematic review had within study limitations and biases which could affect the result of this review. In addition, there were between studies limitations: First, the demographics were quite variable due to marked heterogeneity between the various studies used in this review. It was based on several theories, methodologies, sample size, variability in the settings and population type; while some of the studies were conducted in rural and others were conducted in urban or urban-rural setting. Racial difference was also present, although black South Africans were mostly used in most of the studies used in this review. However, those done in the cape included a sizeable number of Colored and few Whites. Due to this variability a meta-analysis was difficult to conduct.

Second, the definition of adherence was quite variable in the different studies. While some depended on self-reporting others used specially made questionnaire to determine this. Some used laboratory measurements of viral load and CD4 count leading to inter-laboratory and intra-laboratory variability which are common in the use of CD4 and Viral load measurement.

Furthermore, the definition of adherence in the different studies varied. While some used the 95% cut-off point; others used missed-doses per month as the cut-off point for non-adherent. Complexity of the regimen used was another point of variability; while some patients in some studies used first line, others used second line HAART; this no doubt could cause a difference in the adherence levels of the patients due to side effect profile and pill load.

Variability in type of studies and settings they occurred could make it possible for socio-economic status to have effect on the results obtained. Health care in some areas of the country are generally better. For instance, the Western Cape have the lowest HIV rate
(HRSC, 2012), this simply imply that there is less overcrowding, less problem with patient to HCP ratio. This difference may have brought some inequity in the quality of care and health services delivery that different patients in the different studies received in different provinces.

The strength of this study are first, it was possible to restrict this research to south Africa, this no doubt is important as the variability in service delivery was limited to same country and the availability of services and medications for unemployed and people using the public health system was controlled from same national government whose principles, quality and public health policies are generally the same. Second, it is difficult to ignore that the various aspects of ART adherence covered in this study came to the same conclusion from the child, mother and adults; from ART a month post-commencement, 6 months and then a longitudinal studies; from retrospective, cross-sectional and prospective studies. Strength of this review that is significant is the prominent role played by social support at the social and demographic levels.

**Policy implication:**

Adherence is a complex phenomenon that is necessary for patients on ART to succeed in the management of their disease. It varies from the time the patient commences and may continually change according the patients circumstance, public health policies and doctor’s assessment of the patient. All these imply that adherence is not a unidirectional phenomenon but produced by interplay of many factors. One result of this review is that adherence is determined by many factors which ultimately act through the support the patient receives, beginning from immediate family to the government.

The public health policies that govern ARV roll-out need therefore to consider providing support for the patients in a multi-dimensional way; beginning from the patient, encouraging family support of the patient or health institution choosing a treatment supporter that follows up patients, reducing the structural barrier to ART by encouraging community forum for collection of medication and support group. Education of patient on their support systems through the public media and providing databases that will encourage patient follow-up, loss to follow-up and transfer-outs. Providing supports for anxiety, depression and domestic violence through social work. The HCP will provide better support if work-load is less and more time spent with patient. The national health insurance scheme (NHI) has been passed as a law and will commence in 2014; this may also offer ways of reducing the burden on doctors in public service.

Provision of food aids could be an alternative to disability grants and for poor patients. Food aids could be a better option from the start and on as need basis thereafter. Visual and electronic aids could also be adopted to monitor and detect early viral load increases and detect adherence earlier on in the treatment.

**Key Stakeholders:**

The stakeholder is the National, provincial Departments of Health, nurses, health care providers in private or public sectors and HIV care providers. Others include Social workers, treatment supporters’, psychologist, psychiatrists and the various HIV treatment and support organizations in South Africa.

**Recommendation for future research:**

Further research is needed to consolidate the full impact of bio-psycho-social support in ART adherence with a view to identifying areas of social support needed for comprehensive ART program. The area of non-disclosure has major impact on HIV spread and adherence; does disclosure end with the patient or are there ways of ensuring spouses and partners are informed. Another area of research is the use of cellular phone and technology to improve support by treatment supporters and others charged with patient follow-up: Can this serve a dual purpose? Educate the supporter and support the patient.

**Conclusion**

ART adherence does not behave like other chronic diseases. Whereas, adherence improved with improved socio-demographic determinants with most chronic diseases (Nagy & Wolfe, 1984), ART adherence did not show the same pattern. Available evidence in this review suggests that socio-demographic determinants of ART could impact adherence positively or negatively depending on the population, setting, and context of patient and health systems support available to the individual. It further reveals that demographic factors act as positive determinant of ART adherence in the presence of social factors, while social support impacts positively on Adherence. As Bezrashka puts it “What determines health in a population is the nature of caring and sharing in that population...how we look after one another” (Bezrashka, 2005)

**List of Abbreviation:**

- **ART**- Anti-retroviral Therapy
- **ARV**- Anti-retrovirals
Competing Interest: I declare that I have no competing financial or non-financial interests.

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References


Illustrations

Illustration 1

Hypothesized theoretical model of relationship between social support and ART adherence